Ostbayerische
Technische Hochschule
Amberg-Weiden

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Amberg-Weiden

ZÁPADOČESKÁ
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DBU

ESD for 2030:

SDG TRANSFORMATION SPACE

[**S**ensibilisieren] [**P**otentiale **A**ktivieren] [**C**hancen **E**rgreifen]

Projektabschlussbericht

STAND | 31. August 2023

Projekttitel: "ESD for 2023: SDG Transformation SPACE"

Aktenzeichen der DBU: 35600/96-46

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Institut für Nachhaltigkeit und Ethik

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Ort: Weiden (D), Pilsen (CZ)

Inhaltsverzeichnis

1   Einführung/ Motivation

Ziel des SDG Transformation SPACE war es, Studierende der Ostbayerischen Technischen Hochschule (OTH) Amberg-Weiden und der Westböhmischen Universität (WBU) Pilsen zu befähigen, Nachhaltigkeitsdilemmata zu (er-)kennen, zu analysieren, zu bewerten sowie kooperativ und kollaborativ an Lösungsansätzen mitzuwirken. Die Grundlage, auf die sich das Projekt dabei bezog, waren die 17 Sustainable Development Goals (SDGs) der Vereinten Nationen (Agenda 2030). Im Fokus des SDG Transformation SPACE standen Nachhaltigkeitsdilemmata und Zielkonflikte sowohl innerhalb und zwischen einzelnen SDGs als auch bezogen auf ethische Herausforderungen, welche sich bei der Erfüllung der SDGs ergeben können.

Der fächer-, hochschul- und grenzübergreifende Ansatz des Vorhabens, Lehrinhalte zu Nachhaltigkeitsdilemmata in bestehende Lehrveranstaltungen („built-in") beider Hochschulen einzubringen und die didaktische Verknüpfung von Präsenzveranstaltungen (Open Space) sowie virtuellem Lernen ermöglichten eine interdisziplinäre und internationale Erschließung von Lehrenden und Studierenden auf breiter Basis. Durch das im SDG Transformation SPACE praktizierte fächerübergreifende Team- Teaching war es möglich, ein breites Wissen für die zusammenhängenden Herausforderungen der Nachhaltigkeitsdilemmata einzubeziehen. So konnten Wissensinhalte aus verschiedenen Fächern und kulturellen Kontexten vernetzt und erweitert werden.

Über das Format SDG Transformation SPACE wurden nicht nur die in den jeweiligen Fachdisziplinen möglichen Nachhaltigkeitsdilemmata systematisch identifiziert, sondern ebenfalls die im Grenzraum zu Mittel-Ost-Europa relevanten ethischen Herausforderungen im Rahmen einer Nachhaltigkeitstransformation adressiert. Durch die Ausbildung von Leistungs-, Entscheidungs- und Verantwortungsträger/innen für die regionale, aber auch grenzüberschreitende Wirtschaft konnten diese als Wissensmultiplikator/innen in den Unternehmen wirken, um erforderliche Anpassungsmaßnahmen zu initiieren, zu entwickeln und umzusetzen.

Das erwartete Wachstum der Weltbevölkerung von derzeit ca. 7,8 Mrd. Menschen auf ca. 9,74 Mrd. im Jahr 2050 (statista, 2020) stellt die Welt vor große Herausforderungen. Bevölkerungszunahme und damit einhergehender steigender Konsum waren in der Vergangenheit stets mit einer vermehrten Ressourceninanspruchnahme, einem höheren Energiebedarf sowie in der Konsequenz einem Anstieg

klimarelevanter Emissionen verbunden. Eine nachhaltige Entwicklung findet daher gesellschaftlich und politisch immer mehr Akzeptanz. Dies zeigen die weltweiten Klimaproteste oder auch die internationalen Klimaschutzabkommen bis zum aktuell diskutierten European Green Deal.

Die Notwendigkeit, Entwicklung nach dem Verständnis der Brundtland-Kommission nachhaltig zu gestalten, d. h. inter- und intragenerationelle Gerechtigkeit anzustreben und den Bedürfnissen der Ärmsten der Welt dabei eine übergeordnete Priorität einzuräumen, ist international anerkannt. Dies zeigen internationale Vereinbarungen wie das Pariser Klimaschutzabkommen oder die Verabschiedung der 17 Sustainable Development Goals (SDGs), mit denen sich die Weltgemeinschaft dazu verpflichtet, über rein ökologische Nachhaltigkeit hinaus Frieden und Wohlstand für Menschen und Erde anzustreben, und dabei auch soziale und ökonomische Ziele zu berücksichtigen. Auch auf europäischer Ebene wird nachhaltigeres Wirtschaften durch den European Green Deal und zuletzt den neuen Circular Economy Action Plan propagiert.

Eine grundlegende Neuorientierung im Hinblick auf die genannten und weiteren Nachhaltigkeitsstrategien sowie deren Umsetzung im Rahmen eines Transformationsprozesses hin zu einer nachhaltigen Wirtschaft und Gesellschaft bedarf Anstrengungen von Akteur/innen auf sämtlichen Ebenen und in allen Bereichen. In diesem Prozess nehmen Hochschulen eine Schlüsselposition ein (Schmitt, 2018).

Die Ostbayerische Technische Hochschule (OTH) Amberg-Weiden ist eine Hochschule für angewandte Wissenschaften mit den Fakultäten Elektrotechnik, Medien und Informatik und Maschinenbau/Umwelttechnik in Amberg sowie Wirtschaftsingenieurwesen und Gesundheit und die Weiden Business School in Weiden. Aktuell verfügt sie über ca. 450 Mitarbeiter/innen in Verwaltung, Lehre sowie Projekten und über 4.000 Studierende in 52 Studienprogrammen.

Die OTH Amberg-Weiden forciert, auch aufgrund ihrer geographischen Lage, die Zusammenarbeit in Lehre und Forschung besonders mit Partnern in Mittel- und Osteuropa. Zur stärkeren Unterstützung der angewandten Forschung und des Austausches mit Partnern in der Grenzregion wurde mit Förderung des Freistaats Bayern seit 2018 das „OTH Amberg-Weiden Kompetenzzentrum Bayern – Mittel- und Osteuropa (KOMO)" aufgebaut.

Die Westböhmische Universität (WBU) Pilsen ist mit über 11.000 Studierenden eine der größten Universitäten in der Tschechischen Republik. Sie verfügt über neun Fakultäten (z.B. Elektrotechnik, Maschinenbau, Wirtschaftswissenschaften) und vier Forschungszentren in den Bereichen Regional Innovation Centre for Electrical Engineering (RICE), New Technologies for the Information Society (NTIS), New Technologies Research Center (NTC) und Regional Technological Institute (RTI), die europaweit renommiert sind.

In den oben genannten Disziplinen und Fachbereichen bilden die OTH Amberg-Weiden und die WBU Pilsen Menschen zu Fach- und Führungskräften aus und qualifizieren diese im Rahmen eines Lifelong Learnings auch darüber hinaus weiter. Die Studierenden auf die genannten und weiteren Herausforderungen vorzubereiten und zu befähigen, Lösungen zu erarbeiten und umzusetzen, ist zentrales Ziel der akademischen Ausbildung beider Hochschulen. Gerade die internationale Kooperation im bayerisch- böhmischen Grenzraum und die Ausrichtung beider Institutionen als praxisnahe Hochschulen, die eng mit Industrie und Praxis kooperieren und Start-ups fördern, sowie der von ihnen geführte gesellschaftliche Dialog bieten zentrale Chancen, die Nachhaltigkeitstransformation aktiv und signifikant mitzugestalten.

Zwischen den Kooperationspartnern besteht seit über 25 Jahren eine enge und lebendige Zusammenarbeit auf der Basis eines bereits 1997 geschlossenen Kooperationsvertrages. Auf dieser Grundlage wurden schon zahlreiche Projekte und Forschungsvorhaben erfolgreich durchgeführt.

Das Projektteam beider Hochschulen bestand von unten genannten Personen:

OTH Amberg-Weiden:

- Prof. Dr. Christiane Hellbach, Vizepräsidentin, wissenschaftliche Leitung des Instituts für Nachhaltigkeit und Ethik
- Prof. Dr. Lisa Marie Ranisch, wissenschaftliche Leitung des Instituts für Nachhaltigkeit und Ethik, Lehrgebiet Nachhaltige Unternehmensführung und Angewandte Ethik
- Dr. Alexander Herzner, wissenschaftliche Leitung des Instituts für Nachhaltigkeit und Ethik
- Mag. Cornelia Oszlonyai, Studiengangsleiterin und Studienfachberaterin B.A. Studiengang International Business, Hochschulbeauftragte für Diversity und Studierende mit Beeinträchtigung
- Prof. Dr. Denise Laura Fischer, wissenschaftliche Leitung des Kompetenzzentrums MOE; stv. Studiengangsleiterin M.A. International Management & Sustainability

WBU Pilsen:

- doc. Dip.-Ing. Dita Hommerová, Ph.D., MBA, Lehrstuhl für Marketing, Handel und Dienstleistungen (Westböhmische Universität), Coach für die Open-Space-Methode, Projektleitung
- doc. RNDr. Jan Kopp, Ph.D., Lehrstuhl für Geografie (Westböhmische Universität)

Eine Transformation erfordert es, auf vielen Ebenen der Gesellschaft, Wirtschaft und Umwelt zur gleichen Zeit tiefgreifende Veränderungsprozesse einzuführen, die das Leben und Arbeiten für nahezu alle Akteure/innen langfristig prägen (Umweltbundesamt, 2019). Dabei kommt es zwangsläufig zu Konflikten, Wechselwirkungen und auch Dilemmata, die es zu adressieren und so gut wie möglich zu lösen gilt, um eine erfolgreiche Transformation zu realisieren. Diese spielen sich bei der aktuell dringend erforderlichen ökologischen Transformation im Rahmen der Erfüllung der Sustainable Development Goals im Wesentlichen auf drei verschiedenen Ebenen ab:

1. **Innerhalb einzelner SDGs** kann es zu Dilemmata kommen.
2. **Zwischen einzelnen SDGs** kann es zu Dilemmata kommen.
3. **Ethische Herausforderungen** können sich bei der Erfüllung der SDGs ergeben.

Um Dilemmata auf diesen drei Ebenen zu lösen, bedarf es eines offenen und ehrlichen Dialogs, der sowohl Chancen als auch Risiken gleichermaßen in den Blick nimmt. So bietet der Einsatz digitaler Technologien erhebliche Chancen für den Umweltschutz wie etwa der Einsatz smarter Energiezähler oder von Künstlicher Intelligenz zur Verbesserung der Umweltgovernance (Coroama & Mattern, 2019, 58f; Fritzsche et al., 2019, S. S. 66).

Gleichzeitig bergen transformative Prozesse Risiken, die einerseits zum Zeitpunkt der Implementierung noch nicht vollständig abzusehen sind, andererseits aber so weit wie möglich mitgedacht werden sollten. Beim Beispiel des vermehrten Einsatzes von datengetriebenen Digitaltechnologien kann es zu Konflikten mit Zielen wie Nicht-Diskriminierung (SDG #10) (aufgrund der gesammelten persönlichen Daten) oder mit dem Ziel des Ökosystemschutzes (SDG #15) (durch eine voranschreitende Kommerzialisierung der natürlichen Umwelt) kommen. Neben solchen Nachhaltigkeitsdilemmata können mit der Erfüllung der SDGs auch ethische Herausforderungen einhergehen, die etwa Fragen der Sozialverträglichkeit von Maßnahmen wie autofreie Innenstädte oder die Chancengleichheit im Lebensstandard betreffen.

Gerade die Vermittlung von (Transformations-)Wissen stellt einen wirkungsvollen Impuls zum Wandel dar. Jedoch wurden diese Themen bisher nur in wenigen, eher fachspezifischen Studiengängen beider Hochschulen oder im studienbegleitenden, freiwilligen Lehrangeboten (ETHNA) der OTH Amberg-Weiden berücksichtigt.

Alle behandelten Konflikte und Lösungsvorschläge der einzelnen Teams von Studierenden der beiden Partnerhochschulen sind diesem Abschlussbericht für alle 4 Semesterläufe des SDG Transformation SPACE-Projektes beigefügt.

Ziel des Projektes war es, im Rahmen des SDG Transformation SPACE die Studierenden beider Hochschulen zu befähigen, Nachhaltigkeitsdilemmata zu (er-)kennen, zu analysieren, zu bewerten sowie kooperativ und kollaborativ an Lösungsansätzen mitzuwirken. Die Grundlage, auf die sich das Projekt dabei bezog, waren die 17 Sustainable Development Goals (SDGs). Im Fokus des SDG Transformation SPACE standen Nachhaltigkeitsdilemmata und Zielkonflikte sowohl innerhalb und zwischen einzelnen SDGs als auch bezogen auf ethische Herausforderungen, welche sich bei der Erfüllung der SDGs ergeben können.

Der SDG Transformation SPACE wurde fächer- und hochschulübergreifend in bestehende Lehrveranstaltungen eingebaut *(„built-in")*. Ziel war es dabei, Studierende sowie Lehrende hochschulweit und -übergreifend (OTH Amberg-Weiden und WBU Pilsen) auf breiter Basis zu *sensibilisieren* und zu beteiligen sowie auch die *Potentiale* bei für diese Thematik weniger aufgeschlossenen Gruppen zu *aktivieren*. Herzstück war, wie sich bestätigte, der partizipative Ansatz der Open Space-Methode, die es erlaubt, auch große Gruppengrößen zusammenzuführen und komplexe Fragestellungen zu behandeln.

Da Nachhaltigkeitsdilemmata zumeist zu komplex sind, um von einer Disziplin allein gelöst zu werden, integrierte der SDG Transformation SPACE Fachwissen aus verschiedenen Disziplinen. Dies bedeutete sowohl eine fakultäts- und fachübergreifende Lehre als auch eine interdisziplinäre Zusammensetzung der Studierendengruppen. Durch das im SDG Transformation SPACE praktizierte fächerübergreifende Team-Teaching war es möglich, ein breites Wissen für die zusammenhängenden Herausforderungen der Nachhaltigkeitsdilemmata einzubeziehen. Die interdisziplinäre Herangehensweise auf der Ebene der Lehrenden und der Studierenden eröffnete Perspektiven über Fachbereichs- und Fakultätsgrenzen hin-

aus. Dabei war ein Angebot an verschiedenen, auch konträren Theorien und Modellen ein zentrales Element.

Denn wissenschaftliche Diversität, welche „etablierte" sowie „alternative" Ansätze beinhaltete, war für einen problemorientierten und ergebnisoffenen Diskurs von Nachhaltigkeitsdilemmata unerlässlich. Besonders bereichernd war, dass der Ansatz des SDG Transformation SPACE hochschulübergreifend angelegt war und ein Austausch sowohl interdisziplinär als auch grenzübergreifend entstand. So konnten Wissensinhalte aus verschiedenen Fächern und kulturellen Kontexten vernetzt und erweitert werden. Zudem konnten die im Grenzraum relevanten ethischen Herausforderungen im Rahmen einer Nachhaltigkeitstransformation thematisiert werden (z.B. unterschiedliches Problembewusstsein oder Wirtschaftlichkeitsüberlegungen). Das Ziel war, durch die Integration anderer Perspektiven und

wissenschaftlicher Fachbereiche **neues Wissen** aufzubauen sowie **fachliche Kompetenzen** über das eigene Gebiet hinaus zu entwickeln.

Im Sinne der **Handlungskompetenz** brauchten Studierende einen Lehr-Lern-Raum, der es zulässt, sich einzubringen und selbstständig zu handeln. Partizipation ist generell ein zentrales Element von BNE, da so die **Befähigung zur gesellschaftlichen Partizipation und Kooperation** gefördert wird (Rieckmann & Stoltenberg, 2011). Im SDG Transformation SPACE ergaben sich für die Partizipation und Kooperation der Studierenden verschiedene Ansatzpunkte: So hatten Studierende bereits in der Vorbereitung eines Open Space die Möglichkeit, Themen und Fragestellungen zu adressieren. Die Open Space-Methode eröffnete den Raum, selbstbestimmt eigene Vorstellungen sowie Ideen einzubringen, diese zu vertiefen und weiterzuverfolgen. Gerade durch die interdisziplinäre und internationale Zusammensetzung der Studierenden und Lehrenden im SDG Transformation SPACE divergiert auch die Herangehensweise an die thematisierten Nachhaltigkeitsdilemmata; hierdurch konnten neue Lösungswege gemeinsam erarbeitet und erfahren werden. Zudem förderte selbstbestimmtes Lernen die **intrinsische Motivation**. Im Anschluss wurden die Studiereden motiviert, die *Chance* zu *ergreifen*, im Rahmen eines Follow-Ups ihre erarbeiteten Lösungsstrategien in einer Projektarbeit oder Bachelor-/Master-Thesis selbständig weiterzuentwickeln und es funktionierte auch tatsächlich so.

Partizipation und Kooperation erfordern auch passende Lern- orte bzw. -räume (Rieckmann & Stoltenberg, 2011). Die Veränderung des physischen und sozialen Raumes fördert die *Aktivierung* **kreativer Fähigkeiten** und *Potentiale* sowie das informelle Lernen (Deinet & Reutlinger, 2014), sodass es ein zentraler Bestandteil des Konzeptes ist, Lehrende und Studierende im Rahmen des SDG Transformation SPACE an innovativen Lernorten (z.B. den Innovativen LernOrten (ILOs) der OTH Amberg-Weiden) zusammenzubringen. So wurde beispiels- weise der Innovative LernOrt (ILO) Kloster Speinshart im Rahmen des Projektes besucht (s. Bild).

Zwischen dem Erwerb interdisziplinären Wissens und partizipativem Lernen gibt es enge Beziehungen. Diese bestehen in einer grundsätzlichen Verständigungs- und Dialogfähigkeit, ohne die interdisziplinäres Arbeiten nicht realisiert werden kann. Damit wurde im SDG Transformation SPACE die Teamfähigkeit als eine der wichtigsten **sozialen Kompetenzen** gefordert. Ebenso wird die **Fähigkeit, unterschiedliche Standpunkte auszudrücken und zu verstehen**, gefördert. Hinzu kommt die Notwendigkeit zum konstruktiven **Umgang mit Vielfalt** bei fachwissenschaftlichen Zugängen zu Themen, aber auch mit unterschiedlichen kulturellen Sichtweisen.

Ziel war auch, die Teilnehmenden zur aktiven, kritischen (Selbst-)Reflexion anzuregen **(Reflexionsfähigkeit)**. Didaktisch lag deswegen im Virtual Space II der Schwerpunkt auf der strukturierten und an- geleiteten (Selbst-)Reflexion des im SDG Transformation SPACE Gelernten und Erfahrenen. In dieser Phase des SDG Transformation SPACE standen nicht so sehr Kenntnisse und rationale Argumentationsmuster im Vordergrund, sondern vor allem das Wahrnehmen und die aktive Auseinandersetzung mit auftretenden Emotionen, Zweifeln und Unsicherheiten. Gerade Dilemmata werden häufig ignoriert und verdrängt, da sich Menschen unwohl fühlen, wenn diese sicht- und spürbar werden. Um Nachhaltigkeit langfristig umsetzen zu können, müssen dilemmatische Entscheidungssituationen und der Umgang mit Ungewissheiten jedoch bewusst gemacht und bewältigt werden.

Durch die hohe Studierendenzentrierung, die Integration kollaborativer Lehrmethoden, die interdisziplinäre fachliche Herangehensweise und die grenzübergreifende Zusammensetzung der Teilnehmendengruppen wurden im SDG Transformation SPACE Kompetenzen und Fähigkeiten für das fachüber- greifende Verständnis von Nachhaltigkeitsdilemmata und die Bewältigung von Unsicherheiten systematisch gefördert. Die Teilnehmenden wurden *sensibilisiert* und motiviert, an der gemeinsamen Gestaltung einer in großen Teilen ungewissen Zukunft sowie an der für die Lösung neuartiger, bislang unbekannter Probleme im Sinne einer **Transformation** hin zu einer nachhaltigen Wirtschaft und Gesellschaft mitzuwirken *(Chancen ergreifen).* Der fächer- und hochschulübergreifende Ansatz des Projektes, den SDG Transformation SPACE in bestehende Lehrveranstaltungen *(„built-in")* einzubauen, machte es möglich, auch bisher unerreichte Gruppen zu mobilisieren *(Potentiale aktivieren).*

Die skizzierten Leitgedanken und Ziele des Projektes wurden in kompakter Form mittels des Titels und Claims verdeutlicht:

SDG Transformation SPACE

[Sensibilisieren] [Potentiale Aktivieren] [Chancen Ergreifen]

2   Methodik/ Vorgehensweise/ Projektablauf

Zur Beschäftigung mit den Nachhaltigkeitsdilemmata im Rahmen der Lehre wurde ein didaktisch innovativer Ansatz gewählt, der bewusst offengehalten war und viel Raum für Partizipation sowie Dialog bot. Dies war angesichts der unsicheren und sich stetig wandelnden Bedingungen, unter denen sich die Dilemmata manifestieren und gelöst werden müssen, ein passender Rahmen, um kreative Lösungsfindungen anzuregen und möglicherweise bestehenden Zweifeln und Unsicherheiten hinsichtlich der eigenen Lösungswirksamkeit vorzubeugen. Das auf der Methode des „Open Space" basierende didaktische Konzept sah verschiedene Phasen vor, die für eine hohe Beteiligung und wirksame Problemlösung sowohl eine digitale Lehr-Lern-Umgebung als auch Präsenzformate einsetzten. Entscheidend für eine effektive Bearbeitung von Dilemmata waren Rahmenbedingungen, die es den Studierenden ermöglichten, kreative Diskussionen zu führen und ihre Verantwortung und Motivation für ein bestimmtes Thema eigenständig zu erkennen und wahrzunehmen. Dieser konstruktive Rahmen wurde mittels der Open Space-Methode und der zugehörigen Regeln sichergestellt.

Zusammengefasst unter dem Dach des „SDG Transformation SPACE" verfolgte das Konzept die folgenden **Phasen** jeweils in einem Semesterlauf, die gemeinsam zur Umsetzung der oben genannten Ziele beitrugen:

1. **Lead-In**: Kommunikation zum Start der SDG Transformation SPACEs sowie Sensibilisieren der Lehrenden im jeweiligen Modul für mögliche Nachhaltigkeitsdilemmata im Kontext des Fachs und Einführung in die didaktische Methode des „Open Space"

2. **Virtual Space I** (Intro): Einführung in Nachhaltigkeitsdilemmata im Rahmen der SDGs durch Videos und Lernangebote (wissenschaftliche Beiträge, Case Studies, etc.) auf virtueller Plattform sowie Sammlung konkreter Fragestellungen und Interessen der Studierenden

3. **On-Site Space**: Modulübergreifende, interdisziplinäre Durchführung eines „Open Space" zur Diskussion von Nachhaltigkeitsdilemmata (begleitet durch *SDG Transformation Space Coach*)

4. **Virtual Space II** (Wrap-Up): Angeleitetes Reflektieren sowie Abschluss und Dokumentation der Ergebnisse im Rahmen eines Online-Meetings unter Verwendung eines kollaborativen Tools

5. **Follow-Up**: Motivation zur Weiterbehandlung eines Nachhaltigkeitsdilemmas sowie einer

konkreten Lösungsstrategie durch Studierende im Rahmen einer Projektarbeit oder Bachelor /Master-Thesis
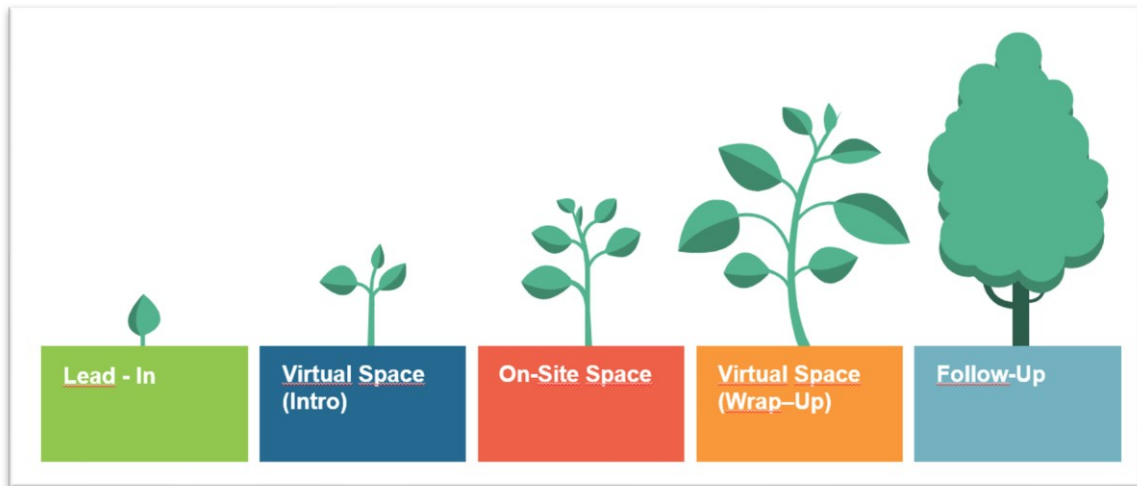

Abb. 1: Phasen des SDG Transformation SPACE

Personell waren in den Prozess verschiedene verantwortliche **Rollen** eingebunden:

- Die Durchführung der fünf Phasen des SDG Transformation SPACE wurde durch eine **Coachin** angeleitet, die mit der Methode des Open Space vertraut war *(externe Schulung für diese Methode 08/2021)* und eine Rolle als Koordinatorin, Motivatorin und Facilitatorin im Rahmen des Prozesses übernahm.
- Begleitet wurde sie von **Lehrenden** der OTH Amberg-Weiden und der WBU Pilsen für den jeweiligen inhaltlichen Fachbereich der Nachhaltigkeitsdilemmata
- sowie **fachlichen Experten/innen** aus dem Institut für Nachhaltigkeit und Ethik (OTH Amberg-Weiden) und der WBU Pilsen **(Projektteam)**.

Die Inhalte für den Virtual Space I (Intro) wurden vom Projektteam gemeinsam konzipiert, entwickelt und umgesetzt. Eine zentrale Rolle spielten die jeweiligen **Lehrenden** in den adressierten Modulen, die einen Termin ihrer regulären Lehrveranstaltung für dieses Format bewusst öffneten und die Rolle der

fachlichen Begleiter/innen in Form eines Team-Teaching im Rahmen des dritten Schritts, der Durchführung des On-Site Space, übernahmen.

Der Ablauf des SDG Transformation SPACE gestaltete sich wie folgt: In der ersten Phase **(Lead-In)** erfolgte eine Einführung der jeweiligen Lehrenden der betroffenen Module in die Idee des SDG Transformation SPACE und die didaktische Methode des „Open Space" sowie ein *Sensibilisieren* für die in ihrem jeweiligen Fach möglichen Nachhaltigkeitsdilemmata. Gemeinsam wurde ein Termin für den On-Site Space festgelegt und mit den Studierenden geteilt. Auch wurde das Projekt SDG Transformation SPACE von Beginn an über die Kommunikation beider Hochschulen (Webpage und soziale Netzwerke genauso wie Forschungsbericht- oder Uni-Zeitschrift)) nach außen getragen, um eine erweiterte Sensibilisierung und Aufmerksamkeit für das Thema zu erreichen. Daraufhin wurde der **Virtual Space I** für die Studierenden geöffnet, so dass sie sich auf einer digitalen Lernplattform mit den SDG-Dilemmata vertraut machen und erste eigene Ideen und Interessen im Kontext ihres Fachs einbringen konnten.

Das Herzstück des SDG Transformation SPACE stellte die dritte Phase, der **On-Site Space**, dar, in dem die Studierenden und Lehrenden der betroffenen Module an einem innovativen Lernort zusammengebracht wurden *(nur das erste On-Side-Space-Treffen musste kurzfristig durch COVID-19-Pandemie online stattfinden)* und auf Basis der Open-Space-Methode konkret an Lösungsstrategien für verschiedene Nachhaltigkeitsdilemmata arbeiten. Hier sollten die individuellen *Potentiale*, die die Studierenden aus ihrem jeweiligen fachlichen und persönlichen Hintergrund mitbrachten, *aktiviert* werden. Auch wurde der Umgang mit Unsicherheiten im Kontext der Nachhaltigkeitstransformation adressiert und die Studierenden sollten sich eigenverantwortlich mit Dilemmata befassen, die sie aus ihrer Sicht als dringlich erachteten und für die sie eine eigene Lösungsstrategie entwickeln wollten. Es ist eine zentrale Idee des Konzepts, dass Unerwartetes in den Diskurs eingebracht werden durfte und sollte, da gerade dies oft eingefahrene Denk- und Handlungsmuster brechen und Kreativität freisetzen kann. Dazu dienten die zuvor kommunizierten vier Prinzipien des Open Space:

1. Wer kommt, ist die richtige Person.
2. Was auch immer geschieht, es ist das Einzige, was geschehen konnte.
3. Es beginnt, wenn die Zeit reif ist.
4. Vorbei ist vorbei.

Diese Prinzipien werden ergänzt um das „Gesetz der zwei Füße", das durch Freiheit und

Selbstverantwortung den Einfluss jedes Teilnehmenden auf Inhalte und Form sicherstellt. Um ein offenes und kreatives Arbeiten zu ermöglichen, fand der On-Site Space in aufgelockerten Räumlichkeiten wie den Innovativen LernOrten (z.B. Multifunktionsraum) der OTH-Amberg-Weiden, dem Innovationslabor „Machbar" auf dem Campus in Weiden statt.

Zum Abschluss trafen sich die Studierenden nochmals auf der digitalen Lernplattform (**Virtual Space II,** Wrap-up), um ihre Ergebnisse angeleitet durch den Coach zu reflektieren sowie unter Verwendung eines kollaborativen Tools zu dokumentieren. In dieser Phase wurde ebenso erörtert, welche *Chancen* mit ihren Ideen verbunden sind und wie diese möglicherweise weiterverfolgt werden können. Die Ergebnisse jedes durchgeführten SDG Transformation SPACE wurden nach außen getragen, etwa durch Artikel auf den Homepages der beiden Hochschulen. Über diese Phasen hinaus wurden die Studierenden im Rahmen eines **Follow-Ups** weiter vom SDG Transformation SPACE Coach sowie ihren jeweiligen Lehrenden begleitet und durch weitere Gesprächsangebote, Themenpools u. ä. motiviert, ihre erarbeiteten Lösungsstrategien im Rahmen einer Projektarbeit oder Bachelor-/Master-Thesis weiter auszuarbeiten. Sofern passend besteht hier auch die Möglichkeit, über das Projektteam Kontakt zu möglichen externen Partnern (z.B. Unternehmen) zu knüpfen, mit denen die ausgearbeitete Lösungsstrategie für ein Dilemma praktisch umgesetzt werden konnten (z.B. PartnerCircle der OTH Amberg-Weiden oder International Summer School on Sustainability 2022 und 2023).

Die Zielgruppe des Formats waren zwar Studierende aller Bachelor- und Masterstudiengänge an allen Fakultäten der OTH Amberg-Weiden sowie an diversen Fakultäten der WBU Pilsen, aber es nahmen auch interessierte Mitarbeiter/innen beider Hochschulen teil. Die Inhalte des SDG Transformation SPACE wurden mit Beteiligten beider Hochschulen in mehreren Sprachen (DE, EN, CZ) entwickelt, geteilt und gemeinsam genutzt.

3   Projektergebnisse

Folgende vier SDG Transformation SPACEs wurden bereits umgesetzt:

$\Rightarrow$ **Wintersemester 2021/22**

Für den Pilotlauf wurde das **Ziel 12 „Nachhaltiger Konsum und nachhaltige Produktion"** ausgewählt. Im Rahmen der Open-Space-Methode haben sich 17 deutsche und 7 tschechische Studierende in 2 Online-Räumen parallel in Slots von 30 Minuten zu Fragen ausgetauscht, die sie selbst definiert haben und wo sie mit anderen Interessenten die Lösungsansätze gesucht haben. Jedes Team hat seine Frage vorgestellt, die Hintergründe, die sie zu dieser Frage geführt haben, beleuchtet und auch drei Best-Practice-Beispiele und drei Worst-Practice-Beispiele aus dem Unternehmensbereich präsentiert.

„I want to thank you very much for this event, I got new perspectives on the matter and most of all I think more about these things. And I think that is very important, because sustainability is and will be an increasingly important issue in our lives. I liked how each of us had to think deeply about a given topic, and thus reminded ourselves of how important this topic really is," meint Teilnehmerin der Westböhmischen Universität Do Hai Yen.

Von dem Pilotlauf entstand ein kurzes Video: https://www.youtube.com/watch?v=dkCB6sLD5gw

$\Rightarrow$ **Sommersemester 2021/22**

Beim zweiten Open-Space-Workshop im Rahmen des SDG Transformation SPACE Projekts haben sich 24 deutsche und 4 tschechische TeilnehmerInnen (Studierende, Professoren/innen und wissenschaftliche Mitarbeiter/innen) über Fragen ausgetauscht, die sie selbst definiert und dafür anschließend in Gruppen Lösungsansätze entwickelt haben. In diesem Projektabschnitt wurden dazu **die Ziele 7 „Nach- haltige und moderne Energie für alle", 8 „Nachhaltiges Wirtschaftswachstum und menschenwürdige Arbeit für alle", 9 „Widerstandsfähige Infrastruktur und nachhaltige Industrialisierung", 12 „Nach- haltiger Konsum und nachhaltige Produktion" und 13 „Sofortmaßnahmen ergreifen, um den Klimawandel und seine Auswirkungen zu bekämpfen"** behandelt.

"For me, the greatest knowledge gained at the workshop is the importance of personal contact and the transfer of real information and experience. The workshop was attended by students from Bangladesh, India and Pakistan. In their questions, these students referred to the real situation in their countries. They brought real stories and knowledge of the local environment into the discussion, where only financial assistance from Western states is not the solution. From their point of view, knowledge and technology transfer are much more important. As well as an emphasis on education.

I really liked the lively discussion environment and the fact that the students had elaborate questions and tried to find a solution. They were also not afraid to express a critical opinion or to oppose their colleague," sagt über das Projekt Mitarbeiterin vom International Office der Westböhmischen Universität, der das Thema der Nachhaltigen Entwicklung sehr am Herzen liegt.

⇒ **Wintersemester 2022/23**

Beim dritten gemeinsamen tschechisch-deutschen Workshop im Rahmen des SDG Transformation SPACE Projekts haben sich 12 deutsche und 14 tschechische TeilnehmerInnen (Studierende, ProfessorenInnen) interessante Lösungsansätze zu folgenden Zielen entwickelt: **1 „Keine Armut", 2 „Kein Hunger", 3 „Gesundheit und Wohlergehen", 4 „Hochwertige Bildung", 6 „Sauberes Wasser und Sanitäreinrichtungen", 7 „Nachhaltige und moderne Energie für alle", 8 „Nachhaltiges Wirtschaftswachstum und menschenwürdige Arbeit für alle", 9 „Widerstandsfähige Infrastruktur und nachhaltige Industrialisierung", 10 „Weniger Ungleichheiten", 11 „Nachhaltige Städte und**

Gemeinden", 12 „Nachhaltiger Konsum und nachhaltige Produktion" und 15 „Leben und Land".

⇒ **Sommersemester 2022/23**

Beim vierten tschechisch-deutschen Workshop im Rahmen des SDG Transformation SPACE Projekts mit 19 deutschen und 5 tschechischen TeilnehmerInnen (Studierende, Professoren/innen) wurden die **Ziele 6 „Sauberes Wasser und Sanitäreinrichtungen", 7 „Bezahlbare und saubere Energie", 8 „Menschenwürdige Arbeit und Wirtschaftswachstum", 9 „Industrie, Innovation und Infrastruktur", 11 „Nachhaltige Städte und Gemeinden" und 12 „Nachhaltiger Konsum und nachhaltige Produktion"** behandelt. *(ein Beispiel von einer internationalen Teamarbeit finden Sie auf S. 21-27)*

Marzieh Bradaran Mohammadi, Studentin der OTH Amberg-Weiden schrieb als Feedback: *„First and foremost, I would like to express my sincere gratitude to you and to Ms. Oszlonyai for providing us with the opportunity to participate in the workshop. The discussions and knowledge shared during the event were truly insightful and have greatly enhanced our understanding of the subject matter."*

Alle Teilnehmenden, die an den fünf Phasen des Projekts teilnahmen, erhielten eine offizielle Teilnahmebescheinigung.

CONFIRMATION OF PARTICIPATION IN THE PROJECT

ESD for 2030:

SDG TRANSFORMATION SPACE

[Sensibilisieren] [Potentiale Aktivieren] [Chancen Ergreifen]

This is to confirm that

XX

participated in the SDG TRANSFORMATION PROJECT
in Winter Semester 2022/23.

doc. Ing. Dita Hommerová, Ph.D., MBA
Project Manager
Vice-Rector for Internationalization
University of West Bohemia

Prof. Dr. rer. pol. Laura Denise Fischer
International Business
OTH Amberg-Weiden

Ein Beispiel von einer internationalen Teamarbeit im „SDG Transformation SPACE"
SS 2022/23

Strategies for Reducing Food Waste: Changing Consumer Behavior and Minimizing Post-Harvest Losses in Small-Scale Food Production

Seminar paper: **SDG Transformation SPACE. 31.05.2023**

Marzieh Baradaran, Hettiaratchige Mary Shanaya Perera, Melika Fakhra

Abstract

Food waste is a significant global challenge with far-reaching social, economic, and environmental implications. This seminar paper explores effective strategies for reducing food waste by focusing on two key areas: changing consumer behavior and minimizing post-harvest losses in small-scale food production. By examining existing research and best practices, this paper offers insights into practical solutions and potential collaborations to address this pressing issue.

Introduction

Food waste is a critical global issue that requires urgent attention and action. Globally, approximately one-third of all food produced amounting to approximately 1.3 billion tons annually goes to waste, resulting in significant economic, social, and environmental consequences. This wastage not only squanders valuable resources such as water, land, and energy but also exacerbates food insecurity and contributes to greenhouse gas emissions.

Reducing food waste not only contributes to sustainable development but also aligns with the principles of the Sustainable Development Goals (SDGs) set by the United Nations.

The SDGs provide a comprehensive framework for addressing various global challenges, including hunger, poverty, and responsible consumption and production. Of particular relevance to food waste reduction are SDG 12 (Responsible Consumption and Production) and SDG 2 (Zero Hunger). SDG 12 aims to ensure sustainable consumption and production patterns, including a specific target (SDG 12.3) to halve per capita global food waste at the retail and consumer levels. SDG 2 focuses on achieving food security, improving nutrition, and promoting sustainable agriculture.

In this seminar paper, we delve into two crucial aspects related to food waste: changing consumer behavior and minimizing post-harvest losses in small-scale food production. By addressing these interconnected areas, we can make significant progress in achieving the targets set by the SDGs, contributing to a more sustainable and equitable world.

The objective of this seminar paper is to explore effective strategies for reducing food waste, considering the SDGs, and proposing solutions that can be implemented at various levels of the food

system. By examining the challenges, analyzing best practices, and fostering collaborations, we aim to provide practical insights and recommendations for policymakers, researchers, practitioners, and individuals committed to combating food waste.

Through a multidimensional approach and alignment with the SDGs, we can work together towards a more sustainable and efficient food system, ensuring food security, promoting responsible consumption, and achieving the broader vision of sustainable development.

During the seminar, the participants identified two crucial questions related to food waste reduction: how to change consumer behavior and minimize post-harvest losses in small-scale food production. This section introduces the background and significance of these questions, highlighting the impact of food waste on food security, sustainability, and resource utilization. The objectives of the seminar paper are clarified, focusing on providing comprehensive answers and solutions to the identified questions.

1. **SDGs' Conflicts and challenges**
   Here are where conflicts or challenges related to food waste reduction may arise:

SDG 12: Responsible Consumption and Production
   ➜ **Target 12.3:** By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.

Conflicts and challenges:
   · Consumer Behavior: Changing consumer behavior and reducing food waste at the retail and consumer levels can be challenging due to habits, cultural practices, and consumer expectations around food quality and appearance. Educating and raising awareness among consumers to minimize food waste while ensuring food safety and quality is a delicate balance.
   · Supply Chain Complexity: Reducing food losses and waste along the production and supply chains involves multiple stakeholders, including farmers, producers, processors, distributors, retailers, and consumers. Coordinating efforts, improving infrastructure, and implementing effective waste management practices throughout these complex supply chains can be challenging, especially in regions with limited resources and infrastructure.

SDG 2: Zero Hunger
   ➜ **Target 2.3:** By 2030, double the agricultural productivity and incomes of small-scale food producers, particularly women, indigenous peoples, family farmers, and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets, and opportunities for value addition and non-farm employment.

Conflicts and challenges:
   Post-Harvest Losses: Food waste can occur due to inadequate storage facilities, limited access to post-harvest technologies, and insufficient training or knowledge among small-scale food producers. Addressing these challenges requires investment in infrastructure, access to appropriate technologies, and capacity building to minimize post-harvest losses and increase the efficiency of small-scale food production.

SDG 13: Climate Action

➔ **Target 13.3**: Improve education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning.

Conflicts and challenges:

Methane Emissions: Food waste, when disposed of in landfills, contributes to methane emissions, a potent greenhouse gas. The challenge lies in effectively managing organic waste and implementing proper waste treatment and disposal methods that reduce methane emissions. Building awareness, implementing waste management infrastructure, and promoting sustainable waste management practices are essential for addressing this conflict.

2. Discussion

Question 1: How can we effectively change consumer behavior to reduce food waste while ensuring food safety and quality?

Changing consumer behavior is a crucial aspect of reducing food waste. Here are some potential solutions:

1. Public Awareness and Education: Implement comprehensive public awareness campaigns to educate consumers about the environmental and social impacts of food waste. Promote the importance of responsible consumption, smart shopping, meal planning, and proper food storage techniques.
2. Information and Labels: Improve food labeling to include clear information on expiration dates, storage instructions, and portion sizes. Encourage the use of standardized food labeling systems to minimize confusion and enhance consumer decision-making.
3. Collaboration with Retailers and Food Industry: Engage retailers, restaurants, and food manufacturers in initiatives to reduce food waste. Encourage partnerships to implement strategies such as offering discounts on near-expiry or surplus food, donating excess food to food banks or charities, and promoting smaller portion sizes.
4. Incentives and Rewards: Implement reward systems or incentives for consumers who actively participate in reducing food waste. This can include loyalty programs, discounts on future purchases, or community recognition for responsible food consumption practices.

Question 2: How can we minimize post-harvest losses and food waste in small-scale food production while enhancing agricultural productivity and incomes?

Minimizing post-harvest losses and reducing food waste in small-scale food production involves addressing several challenges. Here are potential solutions:

1. Infrastructure Development: Invest in appropriate storage and transportation infrastructure, including cold storage facilities and efficient transport systems, to minimize post-harvest losses. Improve access to suitable packaging materials and technologies that preserve the quality and extend the shelf life of agricultural produce. Capacity Building and Knowledge Transfer: Provide training, workshops, and knowledge-sharing platforms for small-scale food producers on best practices for post-harvest handling, storage, and preservation techniques. Promote the adoption of modern agricultural technologies and practices that help reduce waste and enhance productivity.

2. Access to Markets and Value Addition: Facilitate access to local and regional markets, enhance market linkages, and support value addition activities for small-scale food producers. By diversifying product offerings, implementing proper branding and packaging, and promoting direct marketing channels, farmers can reduce losses and capture greater value for their produce.

3. Financial and Technical Support: Offer financial assistance, grants, and loans to small-scale food producers to invest in infrastructure, acquire appropriate technologies, and implement post-harvest management strategies. Foster collaborations between small-scale producers, research institutions, and agricultural extension services to provide technical support and guidance.

It is crucial to tailor these solutions to the specific contexts and challenges faced by different regions and communities. A multi-stakeholder approach involving governments, agricultural organizations, research institutions, and community engagement is essential for implementing these solutions effectively.

3. Changing Consumer Behavior to Reduce Food Waste

3.1 Understanding Consumer Behavior:
Consumer behavior plays a pivotal role in food waste generation. Various factors influence consumer habits, including societal norms, cultural practices, convenience, and food marketing. Understanding the underlying drivers of consumer behavior is essential for designing effective interventions.

3.2 Strategies for Changing Consumer Behavior:
To encourage consumers to adopt behaviors that reduce food waste, several strategies can be employed. Public awareness campaigns can educate individuals about the consequences of food waste and promote responsible consumption practices. Information and labeling improvements, such as clearer expiration dates and portion guidance, can empower consumers to make informed choices. Incentives and rewards, such as loyalty programs or discounts, can motivate consumers to actively participate in waste reduction efforts. Collaboration with retailers and the food industry is also crucial, as they can implement initiatives like surplus food redistribution or donation programs and promote responsible consumption practices.

4. Minimizing Post-Harvest Losses and Food Waste in Small-Scale Food Production

4.1 Challenges in Small-Scale Food Production:

Small-scale food producers face unique challenges in minimizing post-harvest losses. Limited infrastructure, including inadequate storage facilities, transportation networks, and processing centers, often result in significant food waste. Additionally, small-scale farmers may lack resources and knowledge to adopt efficient post-harvest handling techniques, restrict access to markets, and lack value addition opportunities.

4.2 Strategies for Minimizing Post-Harvest Losses:

Addressing post-harvest losses requires a multi-faceted approach that involves infrastructure development, capacity building, market access, and financial and technical support. Investing in appropriate storage facilities, transportation networks, and processing centers is critical to reduce losses during handling and transportation. Capacity building programs can provide small-scale farmers with training and knowledge transfer on post-harvest management techniques. Facilitating access to markets, promoting local and regional collaborations, and encouraging value addition activities can enhance small-scale farmers' incomes while minimizing waste. Financial and technical support, including grants and guidance, can further empower small-scale food producers to adopt efficient post-harvest practices.

5. Case Studies and Best Practices

This section presents case studies and best practices from around the world that have successfully addressed food waste at the consumer level and in small-scale food production. Examples include public awareness campaigns that have effectively changed consumer behavior, initiatives promoting responsible consumption practices, and successful models of infrastructure development, capacity building, and market access in small-scale food production. These case studies highlight key strategies, outcomes, and lessons learned, providing valuable insights for designing future interventions.

6. Synergies and Potential Collaborations

Recognizing the interdependencies between changing consumer behavior and minimizing post-harvest losses, this section explores the potential synergies and collaborations. Efforts to reduce food waste can be strengthened through partnerships between consumers, farmers, retailers, and policymakers. Sharing knowledge, aligning objectives, and coordinating efforts can amplify the impact of individual initiatives and promote a more comprehensive and coordinated approach towards achieving sustainable food systems.

Figure 1: Food Waste Indices for two hypotetical countries

Food waste index (baseline equals 100)
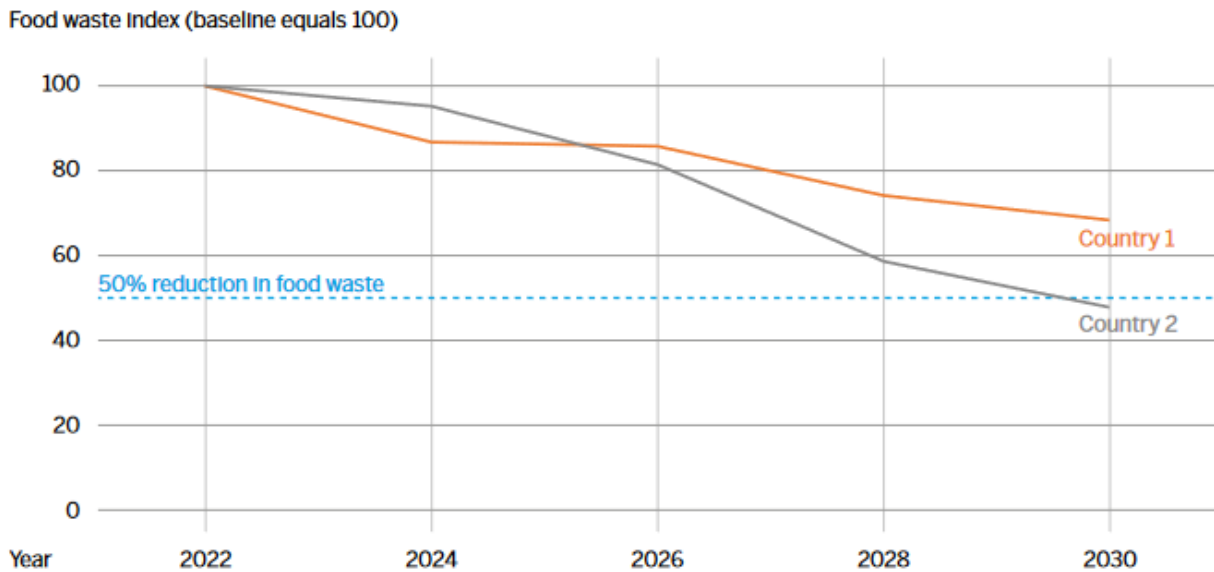
SDG Transformation SPACE. 31.05.2023

Conclusion

In conclusion, reducing food waste requires a multi-faceted approach that addresses both consumer behavior and post-harvest losses. Strategies to change consumer behavior involve raising awareness, improving information and incentives, and fostering collaborations. Simultaneously, minimizing post-harvest losses necessitates investments in infrastructure, capacity building, market access, and support for small-scale food producers. By implementing these strategies and promoting synergistic collaborations, we can move closer to achieving a more sustainable and efficient food system with significantly reduced food waste.

The seminar participants engaged in a comprehensive discussion on the two questions related to reducing food waste while considering the principles of the Sustainable Development Goals (SDGs). The strategies proposed for changing consumer behavior and minimizing post-harvest losses align with several SDGs, particularly SDG 12 (Responsible Consumption and Production) and SDG 2 (Zero Hunger).

By implementing the solutions discussed, such as public awareness campaigns, improved information and incentives for consumers, infrastructure development, capacity building, and market access support for small-scale food producers, we can make substantial progress in achieving SDG 12.3 (Halve Per Capita Global Food Waste at the Retail and Consumer Levels) and SDG 2.3 (Double the Agricultural Productivity and Incomes of Small-Scale Food Producers).

Furthermore, the seminar participants highlighted the importance of collaboration among consumers, farmers, retailers, and policymakers, emphasizing the need for multi-stakeholder partnerships to address food waste comprehensively. This collaborative approach aligns with the spirit of SDG 17

(Partnerships for the Goals), which underscores the significance of global cooperation to achieve sustainable development objectives.

By combining efforts to change consumer behavior and minimize post-harvest losses, we can contribute to a more sustainable and efficient food system, support food security, promote responsible consumption practices, and work towards the broader vision of the SDGs.

References:

https://sdgs.un.org /goals
https://www.unep.org/resources/report/unep-food-waste-index-report-2021

Weitere Projektergebnisse:

Nach zwei Jahren der Projektdauer zeigen sich auch die ersten langfristigeren Erfolge dieses Projekts. Beispielsweise wählten einige der Teilnehmenden die behandelte Problematik als Thema für ihre Abschlussarbeit oder nehmen aktiv an weiteren nachhaltigkeitsbezogenen Projekten teil (z.B. „ENCORE+ European Network for Catalysing Open Resources in Education").

4   Öffentlichkeitsarbeit/ Veröffentlichungen/ Vorträge

Das Projekt wird auf der Homepage der OTH Amberg-Weiden präsentiert https://www.oth-aw.de/forschung/forschungseinrichtungen/institute/in-institute/institut-nachhaltigkeit-ethik/sdg-transformation-space/

Youtube-Präsentation (2021, das erste Open-Space-Treffen durch COVID-19-Maßnahmen online): https://youtu.be/dkCB6sLD5qw

Über die vier Open-Space-Treffen veröffentlichten beide Hochschulen jeweils einen Pressebericht und die Veranstaltungen wurden auch über soziale Medien kommuniziert:

26.11.2021

WBU https://info.zcu.cz/clanek.jsp?id=3977

OTH Amberg-Weiden https://www.oth-aw.de/hochschule/aktuelles/news/202112017067-grenzueberschreitender-workshop-zum-thema-nachhaltiger-konsum-und-nachhaltige-produktion/

17.05.2022

WBU https://info.zcu.cz/clanek.jsp?id=4449

OTH Amberg-Weiden https://www.oth-aw.de/hochschule/aktuelles/news/202205237371-sdg-transformation-space-projekt-open-space-workshop/

15.12.2022

OTH Amberg-Weiden https://www.oth-aw.de/hochschule/aktuelles/news/202212207630-workshop-im-rahmen-des-sdg-transformation-space-projekts/

31.05.2023

WBU https://info.zcu.cz/clanek.jsp?id=5511, https://www.facebook.com/FEK.ZCU/?locale=bs_BA

OTH Amberg-Weiden https://www.oth-aw.de/hochschule/aktuelles/news/202306067917-vierter-workshop-im-rahmen-des-sdg-transformation-space-projekts/

Zusätzlich:

⇒ **WBU 2021 – Zeitschrift zum Thema Nachhaltigkeit:** S. 8

https://dspace5.zcu.cz/bitstream/11025/46531/1/04_Z%2B-%2Bzima%2B2021-5-6.pdf

⇒ **Forschungsbericht 2023 OTH Amberg-Weiden:** S. 130-134 https://www.oth-aw.de/files/oth-aw/Aktuelles/Veroeffentlichungen/Forschungsbericht/OTH_Forschungsbericht_2023.pdf

⇒ **Rainer-Markgraf-Preis** - Bewerbung 07/2023 eingereicht

⇒ Die Projektergebnisse und Projektkonzept werden auch in der Zukunft als Best-Practice-Beispiel auf beiden Seiten der Grenze vorgestellt

5   Fazit/ Ausblick

Die Bedeutung des innovativen Charakters des Projektes SDG Transformation SPACE ist auf verschiedenen Ebenen zu verorten.

Die hochaktuelle Thematik der Lösung von Nachhaltigkeitsdilemmata war im bisherigen Lehrangebot der OTH Amberg-Weiden sowie der WBU Pilsen vorher nicht systematisch enthalten gewesen. Die hochschul- und fakultätsübergreifende Umsetzung des Bildungsformats SDG Transformation SPACE mit seiner Abdeckung des gesamten Student Life Cycle (Bachelor und Master) leistet einen wesentlichen Beitrag, diese Lücke zu schließen. Die Verankerung des Konzepts auf allen Ebenen des Studienfortschritts und die vermittelten Kompetenzen sowie Fähigkeiten schaffen einen bisher nicht vorhandenen Mehrwert für die Studierenden. Darüber hinaus sind besonders durch die Verzahnung bestehender Lehr-Lern-Settings mit Inhalten der Nachhaltigkeitstransformation Lehrende und Lernende gleichermaßen gefordert, sich mit der Thematik auseinanderzusetzen. Beide sollen dazu bei-tragen, Nachhaltigkeitsdilemmata in den verschiedenen Fachbereichen systematisch zu identifizieren und zu adressieren. Somit werden bisherige Denk- und Handlungsparadigmen innerhalb der Fachdisziplinen sowohl von Seiten der Lehrenden als auch der Studierenden in Frage gestellt und um neue Perspektiven erweitert. Deswegen nahmen an einer externen Schulung der Open-Space-Methode auch insgesamt 10 Lehrende der beiden Hochschulen teil, um die Auswirkung auf beiden Seiten der Grenze zu stärken und mehr Studierende mit dieser innovativen Methode anzusprechen.

Das Projekt basiert auf einer kollaborativen Methode, die relevante Akteure aus verschiedenen Perspektiven beteiligte und dadurch eine breite Unterstützung und Reichweite erfuhr. So wurde durch die direkte Einbindung der Lehrenden die fachliche Expertise hinsichtlich der Modulthematik eingebracht und ihre Sensibilisierung für Fragen der Nachhaltigkeitstransformation erreichte. Außerdem wurde durch den Austausch mit Expert/innen zu nachhaltiger Entwicklung und den SDGs (u. a. aus dem Institut für Nachhaltigkeit und Ethik) eine fundierte Arbeit an den jeweiligen Nachhaltigkeitsdilemmata und deren Lösung sichergestellt und einer unbegründeten Komplexitätsreduktion vorgebeugt. Die von allen Beteiligten notwendige Offenheit und Kreativität im Prozess der Durchführung wurde durch den SDG Transformation SPACE Coach gefördert. Sie ging auch explizit auf Unsicherheiten im Rahmen von Transformationsprozessen und der Beteiligung daran als Individuum oder Kollektiv ein, um die wahrgenommene Lösungswirksamkeit zu erhöhen. Die Studierenden selbst nahmen eine zentrale Rolle ein, indem sie im Rahmen des didaktischen Formats des Open Space ihrer

Innovationsfreude, ihrem Ideenreichtum, aber auch ihrem kritischen Geist sowie ihren offenen Fragen und Unsicherheiten Raum geben konnten. Dieses kollaborative Vorgehen im Kontext der Nachhaltigkeitstransformation stellte eine innovative Ergänzung der bisherigen Didaktik an beiden Hochschulen dar.

Das Bewusstsein für die Nachhaltigkeitstransformation und die Notwendigkeit zur Anpassung ist heute als umfassendes Mindset weder an den Hochschulen noch in der Region durchgängig wahrnehmbar. Es bestehen auch keine bekannten Angebote z.B. in Weiterbildungsmaßnahmen, welche diese Themenbereiche in der Hochschulregion adressieren. Über das Format SDG Transformation SPACE werden nicht nur die in den jeweiligen Fachdisziplinen möglichen Nachhaltigkeitsdilemmata systematisch identifiziert, sondern ebenfalls die im Grenzraum zu Mittel- Ost-Europa relevanten ethischen Herausforderungen im Rahmen einer Nachhaltigkeitstransformation adressiert werden (z.B. unterschiedliches Problembewusstsein oder Wirtschaftlichkeitsüberlegungen). Durch die Multiplikatoren/innen-Wirkung beider Hochschulen kann das Bewusstsein für Fragen der Nachhaltigkeit in der gesamten Hochschulregion und über die Grenze hinaus geschärft werden. Durch die Ausbildung von Leistungs-, Entscheidungs- und Verantwortungsträger/innen für die regionale, aber auch grenzüberschreitende Wirtschaft können diese als Wissensmultiplikator/innen in den Unternehmen wirken, um erforderliche Anpassungsmaßnahmen zu initiieren, zu entwickeln und umzusetzen.

In einem für Bayern und ganz Deutschland einmaligen Projekt wurde die Expertise beider Hochschulen (und Hochschultypen) zusammengeführt: einerseits der forschungsstarken WBU Pilsen, andererseits der im Wechselspiel mit der Praxis um innovative Konzepte bestrebten OTH Amberg-Weiden. Der fächer-, hochschul- und grenzübergreifende Ansatz des Projektes, Lehrinhalte zu Nachhaltigkeitsdilemmata in bestehende Lehrveranstaltungen („built-in") beider Hochschulen einzubringen und die didaktische Verknüpfung von Präsenzveranstaltungen (Open Space) sowie virtuellem Lernen ermöglichten eine interdisziplinäre und internationale Erschließung von Lehrenden und Studierenden auf breiter Basis. Dieses Konzept werden wir als Team von beiden Seiten der Grenze weiter als ein Best-Practice-Beispiel präsentieren. Sehr geeignet sind dafür Veranstaltungen für die Hochschullandschaft und andere Interessierten (z.B. in Tschechien „Dny vzdělávací činnosti (Bildungstage)" vom Bildungsministerium organisiert, Fachtagungen oder Veranstaltungen den Organisationen PRME oder DG HochN: Deutsche Gesellschaft für Nachhaltigkeit, Europaregion Donau-Moldau und andere.

ESD for 2030:

SDG TRANSFORMATION SPACE

[Sensibilisieren] [Potentiale Aktivieren] [Chancen Ergreifen]

WS 2021/22

Mögliche Lösungen der identifizierten
Nachhaltigkeitsdilemmata

SDG TRANSFORMATION SPACE

[**S**ensibilisieren] [**P**otentiale **A**ktivieren] [**C**hancen **E**rgreifen]

10.00 – 10.15	Welcome and Key Information For The Day
10.15 – 10.45 https://cesnet.zoom.us/j/99020825510 **Is the permanent economic growth in conflict with the planetary boundaries which are exceeded in many areas?** Julia Zwerenz, Susanne Grundler, Sven Koslar, Thomas Brose	10.15 – 10.45 https://cesnet.zoom.us/j/91098526079 **How can innovative sustainable business models be captured and implemented/ fostered by Governments in their way to contribute for sustainable development?** Carolin Ridder
10.45 – 11.15 https://cesnet.zoom.us/j/99020825510 **Which regional sustainable materials can replace plastic products?** Alexandra Hoyer, Tristan Wieser, Christian Hitzl, Edward Lang	10.45 – 11.15 https://cesnet.zoom.us/j/91098526079 **Is it possible to reduce food wasting, when society wants every piece of food to look perfect and fresh and we want to have an enormous amount of choices when we are shopping?** Barbora Hlaváčová, Lucie Bláhová, Do Hai Yen
11.15 – 11.45 https://cesnet.zoom.us/j/99020825510 **How to reduce waste and how to reduce using disposable packages in fastfoods?** Lukáš Vyhnis, Tomáš Fejtek	11.15 – 11.45 https://cesnet.zoom.us/j/91098526079 **How would you motivate producers/business owners to act sustainably?** Veronika Daňková, Jakub Lochař
11.45 – 12.15 https://cesnet.zoom.us/j/99020825510 **How can unsustainable patterns of behavior be reduced in everyday life – especially in our own household? How can more awareness be created for sustainable solutions?** Lena Messner, Carina Gold, Selina Koller	11.45 – 12.15 https://cesnet.zoom.us/j/91098526079 **Is electromobility the solution to achieve clima neutrality by 2050?** Sarah Müller, Fabian Fluhrer, Simon Jürgen Weiß
12.15 – 13.00 Lunch	**12.15 – 13.00** Lunch
13.00 – 13.30	13.00 – 13.30

https://cesnet.zoom.us/j/99020825510	https://cesnet.zoom.us/j/91098526079
Can increasing environmental damage be avoided at all in conjunction with steady economic growth? Julia Zwerenz, Susanne Grundler, Sven Koslar, Thomas Brose	**How can we 'free' people of their perceived need of owning things?** Carolin Ridder
13.30 – 14.00 https://cesnet.zoom.us/j/99020825510 **How can we talk about sustainable production in Europe (e.g. Tesla or Fackelmann) if their suppliers in developing countries suffer from bad working conditions (e.g. lithium mining in Bolivia for batteries, worst conditions and child labour or carnauba wax mining in Brazil)?** Alexandra Hoyer, Tristan Wieser, Christian Hitzl, Edward Lang	13.30 – 14.00 https://cesnet.zoom.us/j/91098526079 **Do you think it is possible to achieve that every country in the world will use sustainable resources when there exists a fact of a bigger profit for companies and governments from (when) using coal and oil?** Barbora Hlaváčová, Lucie Bláhová, Do Hai Yen
14.00 – 14.30 https://cesnet.zoom.us/j/99020825510 **Would it be possible to make sustainable development (recycling, reducing waste) mandatory, and is it possible to control it?** Lukáš Vyhnis, Tomáš Fejtek	14.00 – 14.30 https://cesnet.zoom.us/j/91098526079 **Do you think, that it is important to educate children in the area of environment and sustainability? If so, why.** Veronika Daňková, Jakub Lochař
14.30 – 15.00 https://cesnet.zoom.us/j/99020825510 **To what extent does sustainability play an important role in the real estate industry? How can the government do its part?** Lena Messner, Carina Gold, Selina Koller	14.30 – 15.00 https://cesnet.zoom.us/j/91098526079 **In an ideal world, what more should be done to achieve the Goal "Responsible Consumption and Production"?** Sarah Müller, Fabian Fluhrer, Simon Jürgen Weiß
15.00 – 15.10	**Closing Ceremony**

Discussion Results from the SDG Transformation Space

Date: 26.11.2021

Name: Carolin   Ridder

Matriculation   No.:

19740046

➢ **Topic of the day SDG 12: Ensure sustainable consumption and production patterns**
➢ **Personal focus for the discussion on the sub-target SDG 12.5.: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.**

The discussion questions and suggested solutions:

1. How can innovative sustainable business models be captured and implemented/ fostered by Governments in their way to contribute for sustainable development

Nowadays, an increasing number of companies have a sustainable business model. This is because they want to eliminate risks (e.g. bad reputation due to environmentally harmful behaviour), benefit from sustainable trends and build a green competitive advantage, or partly because of the founders' personal convictions. Sometimes they fail and remain at the level of greenwashing, but other times fundamental changes are achieved. Especially when these include changes in business models and aligning corporate profit with sustainable progress, crucial steps for sustainability are likely to follow.

Examples include companies that contribute to a circular economy, such as "AfB – social and green IT", which refurbishes IT equipment and resells it. In this way, they protect products from their premature end of life (EOL) and ensure that the resources remain in circulation. In the ideal case, the idea of the circular economy is that materials are continuously in closed loops and their value is then constantly preserved.

Another example regards companies that, by providing a service, make it unnecessary to own a certain product. An example is the company "Commown" which offers the possibility to rent phones and other technical equipment. In these concepts, there is no incentive for planned obsolescence because the company will have the intention to provide very well-functioning and long-lasting devices which then do not need to be repaired or replaced all the time. It is more economic for them to repair instead of to replace items which also fosters preserving materials.

And as a third example, some companies go beyond reducing the harm their products create for the environment and instead design products with additional values. An inspiring example is the company "Saatgutkonfetti" that offers a biodegradable from of confetti which contains seeds of local plants and thus contributes to the protection of insects.

Despite these good examples, most companies do not follow sustainable practices, which is why one needs to reflect on how sustainability can be fostered by governments. The mentioned ideas include that Governments may establish means to financially foster sustainable business models. If legally possible, an option could be to collect the money that results from fees companies need to pay for non-compliance with environmental and social laws and regulations, and to invest this money into projects that promote sustainable businesses. The idea would publicly demonstrate and raise awareness that unsustainable behaviour does not pay off, in contrast to sustainable achievements which may get financially rewarded. Of course, this should not apply to fines that are intended for the regeneration of the damage caused by a company.

It was also addressed that there exists the Startup Academia Alliance programme in India which encourages a spirit of entrepreneurship and the foundation of startups in India. The person suggested to attach a sustainable innovation approach to such programmes in order to create incentives for new sustainable business ventures. It would be possible for example to introduce a competition between the different business concepts. The most innovative and sustainable ones would then win the price to fund their business venture.

Another inspiring idea that was raised concerns problem statements companies and local governments hand over to universities so that groups of students and professors develop solutions together (also regarding an example for India). This could also be taken up for sustainability issues. Especially when dealing with tangible local challenges, study groups from the respective disciplines - or even interdisciplinary groups - can be involved. It would motivate students to make an impact for the society and to learn how to apply their knowledge in practice. It also provides the opportunity for transdisciplinary collaboration between local communities and universities for encountering sustainable challenges resulting in essential education on sustainability and collaboration for all parties involved.

2. How can we 'free' people of their perceived need of owning things?

Many environmental and social issues arise from unsustainable consumption patterns of our today's society. Among many societies in the Global North, people share a concept of materialism. Since most consumers already have what they need to satisfy their needs, companies need to get creative and convince them of new needs, or from improvements of the new product. Old things should be perceived as outdated or out-of-trend and the new ones as the finest - the new 'must-haves'. In consequence, people consume new goods excessively which leads to a depletion of raw materials, requires water consumption, causes emissions of greenhouse gases and often also from toxic substances which may pose a risk to people and the environment. In addition to that, when the goods reach their end of life (EOL), they create tons of wastes which are not recycled in many places and as a result often end up in the environment.

In order to find a solution for the issues of today's consumerism maybe we need to go back to the start and ask why we buy what we buy: If we think about the last 10 things we bought for example, which of these were really things we need? Why we felt the need to purchase the not-so-necessary items? Why did we want to own them?

A large number of ideas have been raised to 'free' people from their perceived need of

owning unnecessary things: There are many alternatives for buying products which include sharing, renting and repairing, but eventually it is also about a change in mind towards consuming products.

There are flourishing sharing networks which give people the chance to find what they need and help each other out buy lending products, an example which emphasizes the often neglected possible "social" dimension of social networks. Other sharing examples include car-sharing or swap events which give people the chance to give used things as clothes away and to find new ones. Sharing can thus be a fun social event and come along with other benefits as saving money (in comparison to purchasing new items).

Next, there are renting options which give people the option to obtain essential services as using phones (regarding the example of "Common") or being nicely dressed at a prom without needing to buy the respective product. Renting clothes for example, is a good alternative for buying something we probably only wear once such as a dress for prom. This way, we only purchase what we need and for the period we need it and the companies generally have the incentive to provide long-lasting good quality products for their renting services.

And thirdly, there are several options which foster reparation of goods instead of simply replacing them. Often, people buy something new only because reparation seems to be too complicated.
Social events such as "repair cafés" may help to foster the spirit of 'What does not work will be repaired' and enable people to get together and help each other in repairing their broken things. Sometimes all that is needed is a special tool, a spare part or just a good advice.

However, it was clearly stressed that eventually a change in mind and attitude towards goods is needed to end the destructive way we consume in today's time. Sometimes people also feel the need to compensate for something through consuming. It was mentioned that the more satisfier people are, the less they feel the urge to consume.
In consequence, it is beneficial to focus on overall
satisfaction and to not define the satisfaction primarily through the things we obtain. The minimalism movement for example, represents an alternative concept of consuming things and also of perceiving the pieces we have. In addition, lifestyles which connect us more to nature and psychological wellbeing, may help us to overcome our primary focus on the material level. Another challenge is that we define ourselves strongly in terms of owning things. Other perspectives that define oneself in terms of being and the intercultural level and assume basic self-worth, for example, may be helpful as an alternative. Companies, for example, or also influencers can be role models for a change in mind on consumption patterns. People would then also follow a trend, such as minimalism, but if it helps to question the consumer trends one follows, that would be a great step forward. However, that is not the case if it only remains a trend and people simply get back to consumption-as-usual after some minimalistic weeks.

UNIVERSITY OF WEST BOHEMIA

FAKULTY OF ECONOMICS

Semestral work from KMO/MRP

Conflicts in Sustainable Development Goal 12

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Pilsen 2021

Introduction

This semestral project is focused on Agenda 2030 and its SDG number 12 – Sustainable consumption and production. We choose the topic, because we are interested in sustainability and we wanted to discuss our points of views with other participants of this project.

First of all, each of the 17 Sustainable Development Goals is introduced and after that we start with theoretical part of the goal 12. The Sustainable consumption and production consist eleven points or strategies how to achieve it and the aim of this project was to find and discuss the conflicts between them.

The main part of this semestral work is participating in SDG Transformation SPACE in cooperation with German university in Weiden. Originally, the plan was a one-day trip to Weiden including the open space discussion face to face. However, due to the pandemic situation, whole project was online. In the second part we describe the video conference and how it was going.

At the end we summarise other's opinions and views on our questions and what we find out. We gain a lot of information and interesting points, which are described in the output of the whole conference.

1 The 2030 Agenda for Sustainable Development

Even though there has been a great success in implementation of the United Nations Millennium Development Goals (MDGs) in 2000-2015 (Figure 1), world's leaders agreed that this planet urgently needs similar but more widespread methods to improve living standards and also stimulate and promote sustainable development.

Figure 1 Millennium Development Goals (Source: United Nations, n.d.a)

In January 2015, the UN General Assembly met in New York to discuss a new development agenda. This process culminated in September 2015 with the adoption of the document Transforming our World: The 2030 Agenda for Sustainable Development (further Agenda 2030), which is a direct follow-up to the successful United Nations Millennium Development Goals. It includes 17 Sustainable Development Goals (SDGs), which are a commitment of all countries to achieve sustainable development in all three pillars by 2030.

Goals in this Agenda are universal and applicable to everyone, regardless of culture, level of development, politics or approach to life.

The mission of the Sustainable Development Goals is to ensure a dignified life for people on the planet while respecting basic human rights and reducing poverty and hunger or effectively protecting the environment. (United Nations, n.d.b)

1.1 Sustainable Development Goals (SDGs)

The Agenda 2030 contains 17 main goals (Figure 2) and 169 sub-goals. The individual main goals focus on one specific global problem.

Figure 2: Sustainable Development Goals (Source: UN)

Introduction to the Sustainable Development Goals:

1. No poverty

This goal deals with the overall elimination of extreme poverty all over the world and ensuring access to social services (medical care, etc.) for all. Extreme poverty is defined as living on less than $ 1.25 a day. (United Nations, n.d.c)

2. Zero hunger

Another goal is to eliminate hunger and achieve access to everyone to a safe, nutritious and adequate diet, to eliminate all forms of malnutrition and also to promote sustainable agriculture. One in nine people in the world is malnourished, although the number of malnourished people in developing countries has fallen to 12.9 percent in the 20 years since 1990. (United Nations, n.d.d)

3. Good health and well-being

UN member states want to reduce maternal mortality worldwide and prevent the death of children under the age of five. Of course, there is also an effort to end existing epidemics, an effort to combat hepatitis, water-borne diseases and other diseases. Support for research and development of vaccines and drugs for communicable and non-communicable diseases is also an important point. (United Nations, n.d.e)

4. Quality education

Ensuring free, equal and quality primary and secondary education for all is the fourth goal of Agenda 2030. Also the availability of quality education in early childhood or the elimination of gender inequality in education. The UN wants to ensure equal access to affordable vocational, apprenticeship and higher education for all. (United Nations, n.d.f)

5. Gender equality

Another goal is to end all forms of discrimination against women and girls worldwide and to eliminate all forms of violence against women and girls in the public and private spheres, including trafficking in human beings and sexual or other exploitation. Elimination of all harmful practices such as child and forced marriages. Ensure equal opportunities for women at all possible levels, both political and economic. (United Nations, n.d.g)

6.   Clean water and sanitation

In its sixth goal, they want to ensure universal and equal access to safe and affordable drinking water and to provide adequate sanitation and hygiene facilities for all. At the same time, improve water quality by reducing pollution, ensure safe water reuse and improve water recycling with the involvement of local communities (United Nations, n.d.h)

7.   Affordable and clean energy

According to the 2030 Agenda, it is necessary to ensure access to affordable, reliable and modern energy services for all, while significantly increasing the share of energy from renewable energy sources. (United Nations, n.d.i)

8.   Decent work and economic growth

The eighth goal is to maintain economic growth, especially in developing countries, to strive for higher levels of economic productivity or to support policies that focus on job development, small and medium-sized enterprises. (United Nations, n.d.j)

9.   Industry, innovation and infrastructure

Another goal is to develop the infrastructure in all directions so that it is high quality, reliable, sustainable and resilient. In developing countries, improve access to financial services for small industrial enterprises, sustainably modernize infrastructure and improve industrial equipment (United Nations, n.d.k)

10. Reduced inequalities

Achieving and maintaining income growth, especially in the bottom 40% of the population, to keep it above the national average. An important aim of this goal is to ensure equal opportunities for all and the social, economic and political inclusion of all, regardless of gender, age or race. (United Nations, n.d.l)

11. Sustainable cities and communities

Another goal is to ensure access to adequate, safe and affordable housing for all and to reduce the negative impact of the urban environment on the population. (United Nations, n.d.m)

12. Responsible consumption and production

Achieve sustainable and efficient management of limited natural resources by 2030 or reduce unsustainable chemicals and waste management. Another sub-goal is the

implementation of the ten-year framework of programs for sustainable consumption and production in all countries. (United Nations, n.d.n)

13. Climate action

Climate change is inevitable, and it is necessary to increase the resilience and adaptability to the dangers associated with these changes or to integrate climate change measures into national policies and education, thus raising awareness of the global challenges of climate change. (United Nations, n.d.o)

14. Life below water

This goal sets out the need to prevent and reduce pollution caused by careless generation and waste management. In addition, the UN wants to sustainably manage and protect marine and coastal ecosystems. (United Nations, n.d.p)

15. Life on land

The 15th goal speaks of the need to ensure the protection, restoration and sustainable use of terrestrial and inland freshwater ecosystems, to stop deforestation, to combat desertification and to preserve mountain ecosystems. (United Nations, n.d.q)

16. Peace, justice and strong institutions

Reduce violence in all its forms, reduce corruption and bribery, or end exploitation and human trafficking. Also significantly prevent the movement of illegal funds and weapons. (United Nations, n.d.r)

17. Partnership for the goals

The last and most comprehensive goal is to revitalize the Global Partnership for Sustainable Development and strengthen the means to implement it. For example, helping developing countries achieve long-term debt sustainability or promoting political cohesion for sustainable development. (United Nations, n.d.s)

1.2 Goal 12 - Responsible consumption and production

Responsible consumption and production is one of the goals which can be affected by each of us every single minute. The goal should ensure resource efficiency, recycling, reuse and sustainable production of resources to limit the impact on our environment and reduce waste. We consume more resources than the planet can generate, and growing rates of pollution and waste only exacerbate the problem. According to UN research the global "material footprint" increased between 2000 and 2017 by 70 %. The UN also published that every minute 1 million plastic drinking bottles are purchased and every year we throw away 5 trillion single-use plastic bags. Another problem is food waste, even though there is ⅓ of food thrown away,

there are still 690 million people who suffer from hunger. There is evidence that 35 % of all greenhouse gases come from food production and nearly 10 % come from wasted food.

The UN has published on their website that they assume the population can grow up to 8,5 billion in 2030 and up to 9,7 billion in 2050. They said that the equivalent of almost three planets could be required to provide the natural resources needed to sustain current lifestyles. (United Nations, n.d.t)

The UN sets 11 targets in this goal and they are:

12.1 Implement the 10-year framework of programmes on sustainable consumption and production

12.2 Sustainable management and efficient use of natural resources

12.3 Halve per capita global food waste

12.4 Responsible management of chemicals and all waste

12.5 Substantially reduce waste generation through prevention, reduction, recycling and reuse

12.6 Encourage companies, especially large and transnational companies, to adopt sustainable practices and reporting

12.7 Promote public procurement practices that are sustainable

12.8 Ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature

12.A Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production

12.B Develop and implement tools to monitor sustainable tourism and promotes local culture and products

12.C Rationalize inefficient fossil-fuel subsidies that encourage wasteful consumption by removing market distortions
(The Global Goals, n.d.)

Probably one of the most controversial thing is if it is possible to have permanent economic growth in accordance with SDG's. The controversy between profitability and sustainability has to be explained and there has to be a common way to achieve both. Another topic could be finding the right motivator for companies and businessmen and how to monitor their sustainability. Lack of social and political will to change makes every step forward more difficult, but as we know there is no time for choices. However, is it even possible to teach consumer society sustainability?

In this project we choose two questions to be discussed. One about food wasting and the contrast of hunger and wasting. And the second one is about using sustainable resources in contrast with cheaper coal and oil.

2 SDG Transformation SPACE

The aim of the project SDG Transformation SPACE is to connect students from two universities (Czech and German) and analyse sustainability topics. This year the topic was goal 12 - Sustainable consumption and production. Project focuses on sustainability dilemmas and conflicting goals both within and between individual SDGs in fulfilling the goals. (Ostbayerische Technische HochschuleAmberg-Weiden. n.d.)

Originally the main part of the project should be a day spent in Weiden but due to the pandemic situation it had to be transformed to online meeting. The method of the meeting was Open Space discussion about dilemmas in the goal Sustainable consumptions and production. Whole event was divided into two rooms in app Zoom. There were always two groups at the same time, one in each room introducing their own question to discuss. Each team has 30 minutes for the discussion and other participants could choose which topic is more interesting for them. The one day conference was divided into two parts, one was in the morning and the second one after lunch. One team had their own 30 minutes in the first part and then another 30 minutes in the afternoon part.

2.1 Our part in the SDG Transformation SPACE

Our participation in the SDG Transformation SPACE was performed by three colleagues.

A reason why we formulated these following questions is that we would like to make at least a little impact on the way people produce and consume food or resources.

These two topics are actually connected because you have to use some resources to create plants which then become products, the food.

Nowadays people live in a fast-turning world so they do not have the time to shop responsibly but still they find the time to find the perfect apple.

And when we focused on the unlimited resources produced by our planet we found out that it is the human selfishness and hunger for power which create that it is very hard to be efficient in using these precious natural resources.

2.2 Our two questions

During the event, we came up with many opinions, different views on the topic and even certain solutions.

Our first question was:

Is it possible to reduce food wasting, when society wants every piece of food to look perfect and fresh and we want to have an enormous amount of choices when we are shopping?

During this question, we encountered several pitfalls. First of all, we all agree that it is true that in today's world, we only buy and select foods that look good at a certain price. Furthermore, if there are two products, where one of them has certain shortcomings and both cost the same price, people always choose the product that is better and the other is just a waste of food, because these products then end up in the trash. We agreed that, for example,

with the example of selling apples, at the very top of the supply chain, the most damaged are sold to customers (suppliers) who buy these imperfect apples at a very low price and process them into another product, such as juice. The best ones are selected to be sold to large supermarkets, which then sell these apples to customers. So we have come to the conclusion that if a change needs to be made, a change in demand needs to be made and only then there will be a change in supply. However, if we focus on the waste of food at the lowest level of the chain, we have agreed to sell products that have certain defects at a discount. Also, to talk more about this issue, for example using an influencer, that it is okay to buy, for example, a product that is reaching the end of its shelf life, when we plan to consume this product in the near future. Several tons of food end up in the basket every year.

During the event we came up with some solutions and ideas:

1) Society should firstly keep in mind what we are able to eat so we know what amount of food we should buy. It is not only wasting the food, but only the money and the time.

2) If we have bought food that we are not able to eat or consume in the near future, there are many food banks where we can deliver this food. This offers a chance that the food can be donated to people who need it and thus it will not be wasted.

3) We all agreed that everything comes from the demand, so if we do not change the way and how we view this problem, there will not be a change in the supply.

4) And most importantly, to somehow really solve this, we need to educate people more about the food waste, for example providing seminars to students on how to manage food management. And for the public, really show them the data of how much money is spent on food, how many tons of food are wasted every year and yet still there is a hunger in the world. Education and awareness are the key.

From our opinion the best practice is and would be:

- If the organisations around the world start an initiative when they can provide uneaten food, food right before expiration or just weirdly looking food to families with little income or homeless people (FOOD BANKS) To spread this idea around the world, there would be more of these organizations.
- We really appreciate the new Agenda 2030 for the Czech Republic and find it perfect. This agenda says that the large companies which are producing food, have the obligation to use the food banks in order to prevent food waste and provide food to vulnerable people (Druhý Dobrovolný národní přezkum Agendy 2030 v České republice, 2021). We really find this uplifting and are hoping it will work. We really support these decisions.
- A great example in Czech Republic is: Nesnězeno.cz - "UNEATEN" - an app based on opportunity, that restaurants can make special offers with their uneaten food online, and people can find it and buy it with discount.

- And last, an e-shop: Rohlík.cz - Knuspr.de - this online food market has a special selection called "save the food" with food which expires soon, to highlight this food might be thrown out. We think this is a great idea, very simple and very powerful. Other organizations could also include this option in their activities.

Bad practice:

- We think that the first moment when customers are creating food waste (after the moment when apples are harvested by farmers who threw the damaged apples away) is in the supermarket where customers try to find the perfect apple, but they could actually take the apple with a little bit of damage which could still be edible. And the ones that do not fit the measures or are simply worse, are thrown away.
- More than 30 % of food production is thrown away, but we still have hunger on our planet.
- 8 % of greenhouse gases comes from uneaten food emission.
- Supermarkets in Czech Republic have specific requirements for farmers, such as what the vegetables should look like. For example, the potato must have a diameter 4-6 cm, cauliflower must weigh around 1 kilo and kohlrabi can not have any cracks. We find this difficult because it has an overflow effect. The people's point of view needs to be changed.

Our second question was:

Do you think it is possible to achieve that every country in the world will use sustainable resources when there exists a fact of a bigger profit for companies and governments from using coal and oil?

This question was very complex and challenging for everyone. Because it touched on many aspects and what we also took away from the event and this question is that everything is related to everything. We all agreed that there is a hope and that it is certainly possible, but only over time. We have concluded that when coal and oil run out, countries will need to come up with alternative solutions. And these solutions can be in a sustainable form, because when that happens, sustainability is likely to be the only possible way.

From our point of view the solution is:

- We need to develop a sustainable method of using sustainable resources (different from existing ones) and then implement a good logistic system for the companies, so they can easily transform their use of resources.
- In the long-term we can see that there exists even bigger profit for companies, they just need to transform their use of resources.
- We should create more and more projects connected to development of the use of sustainable resources at school and in the engineering department => this topic interferes into every department.
- We think that in the future, the society will force companies to transform and also, if the fuel runs out there will be no other option.

Best practice:

For example, in 2020, 35% of the electricity produced in the South Moravian Region came from power plants using renewable sources.

- Next ČEZ Renewables, its production portfolio with a total installed capacity of more than 200 MW consists of flow-through and storage hydroelectric power plants on the Elbe, Divoká Orlice, Berounka, Vydra, Chrudimka, Moravia and Svratka. Emission-free electricity is also supplied to the grid by wind power plants in the Svitavy and Vysočina regions, photovoltaic power plants in localities in southern Moravia, southern Bohemia, central and northern Bohemia.

- In 2020, the EU produced more electricity from renewable sources than from fossil fuels - In 2020, renewables produced 38% of European electricity and fossil fuels 37%. Growth of electricity production from RES in the EU - Among the best are the Netherlands (annual increase of 40%), followed by Sweden (36%), Belgium (28%), France (14%) and Poland (13%).

Worst practice:

- The Czech Republic uses 47 percent of energy from thermal power (coal). It is due to history and a different starting line compared to other countries.

- The Czech Republic practically does not contribute to the increase in electricity production from RES in the EU - in the Czech Republic, electricity production from RES has not been growing for a long time. Numerically speaking: between 2015–2019, domestic electricity production from wind and solar increased by 5%, which corresponds to a five-year increase in production of about 0.15 TWh. Such a five-year "Increase" will not cover even half a percent of electricity consumption in the Czech Republic.

Summary

In this semestral work we introduced the Millennium Goals and also the Agenda 2030 which consists of the 17 Sustainable Development Goals.

The purpose was to participate in SDG Transformation SPACE in cooperation with other students from University of West Bohemia and students from OTH Amberg – Weiden. This project focused on conflicts in Sustainable Development Goal 12 which our group had to research and discuss.

We had such a great time talking to others about the topic of sustainability which is very close to our heart. This session made us think about sustainability even more than before. We are glad that there exist people who also care about the future of our planet and want to be a part of the ones who want to preserve a good living on Earth.

We also would like to say that we gained a bigger perspective and opinions of this problem. We have high hopes that we as people with the right amount of time will reach the state of sustainable living one day.

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FACULTY OF ECONOMICS
UNIVERSITY
OF WEST BOHEMIA

SEMESTRAL WORK - SUBJECT KMO/MRP

Tomáš Fejtek, Lukáš Vyhnis

Plzeň 2021

1   Prologue

We decided to participate in this project because we wanted to experience something new, something we haven't experienced yet. We also wanted to make a study trip to Germany and enjoy the day in Weiden. That's why we were quite disappointed when we found out about the online form of the summit. But eventually it was better than we expected.

Our preparations for the project were based on watching related videos, doing research, and reading a lot about the topic. We also did a lot of brainstorming during the process. We came up with several questions and dilemmas we could possibly discuss about. Eventually we picked two questions (with the little help from our teacher) which we thought were suitable the most.

2 SDG – Sustain Development Goals

Sustainable Development Goals (SDG) is a long-term project created and approved by United Nations organization. Life span of this project is due 2030 and it was approved in 2012 in Rio de Janeiro, Brazil. It contains 17 main goals to ensure sustainable development, gender equality, poverty and hunger reduction, quality education and overall equality, industry innovation and climate changes protection on the planet Earth (United Nations, 2021). More of the goals is below:

Image 1 - Sustainable Development Goals

3 Goal number 12 – Sustainable production and consumption

Goal number 12 sets itself a task to ensure sustainable production and consumption. That means to popularize recycling, zero waste idea or shared economy model. This goal has its own secondary goals or tasks as following (Asociace společenské odpovědnosti, 2021):

1. By 2030, achieve the sustainable management and efficient use of natural resources.
2. By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.
3. By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil, in order to minimize their adverse impacts on human health and the environment.
4. By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse.
5. Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.
6. By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.

7. Support developing countries to strengthen their scientific and technological capacity to move towards more sustainable patterns of consumption and production.
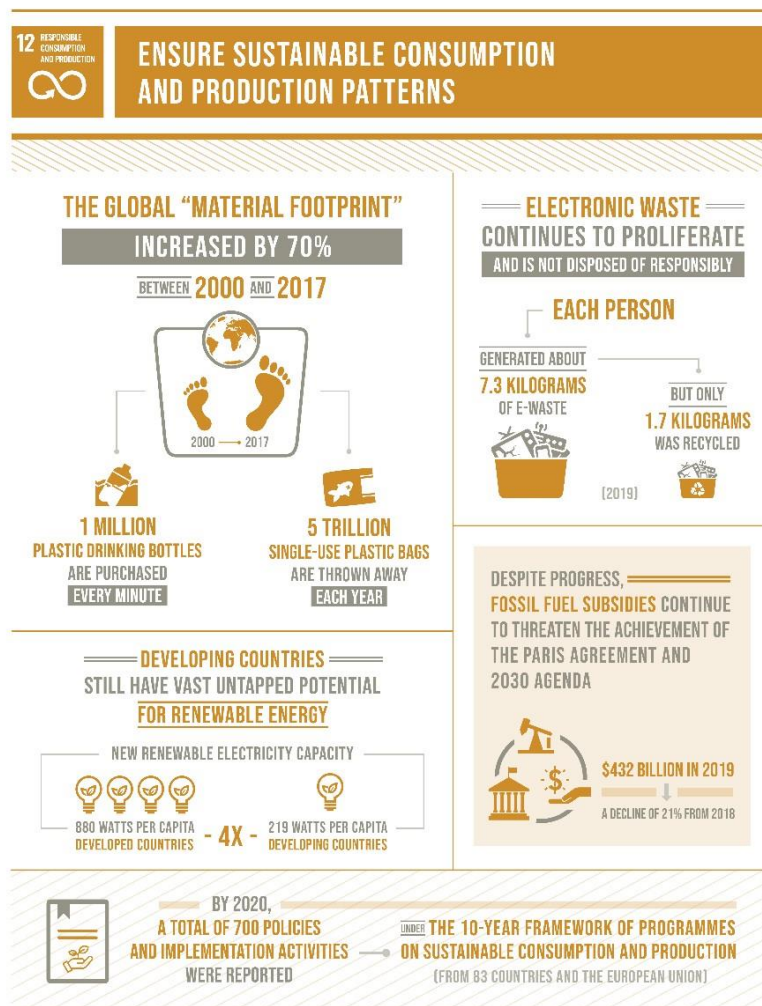
Image 2 - Sustainable production and consumption

4   Our questions

We came up with several questions during our brainstorming and research phase, but only two could be represented at the summit. We have chosen two specific questions which are in our opinion the most current and important. These two questions bother people the most from the rest of the questions we came up with.

4.1   Question 1
How to reduce food and disposable packaging waste in fastfoods?

We introduced our first question with the following introduction:

We chose this question because fastfoods are big producents of food waste and there is still big problem with recycling and sorting waste even though it's getting much better. For example, McDonald or KFC and other big fastfoods are sorting waste in production but even after customers when they leave leftovers and leave the restaurant place. But there's still big problem with using disposable packages. It would be nice for customers to have their own package which they could use multiple times and that would lower the amount of waste. But in some situations, it still wouldn't be possible because when you order the food to home, how would they get your package? We also think that it's almost impossible to get rid of plastic and paper for good, because it's already the thriftiest and the cheapest way to pack the food. That's what we wanted to discuss.

The discussion proceeded with several ideas:

In Mexico they use special packaging made of banana leaves. That would be a new and sustainable way to pack the food in restaurants and fastfoods and it would also be friendly to environment. In our opinion it's not currently possible to produce such an amount of banana leaves packaging we actually need to satisfy the demand. Another idea was to invent some kind of special multiple-use packaging that would be accepted in most of the fastfoods and restaurants around the world. We afterwards found out that this model already exists in Germany, and it works like a charm. Meaning that when you order a food to home, the courier brings you the food in the multiple-use plastic packaging and picks up your old, already used packaging. If you don't have one yet, you'll pay for it. We could liken this process to refundable multiple-use plastic cups at festivals. And the last, but not least idea was to get rid of the packaging for good – the courier would just bring your food in own multiple-use packaging and put the food right on your plate.

Regarding the second problem – leftovers from the fastfoods and restaurants – we didn't manage to come up with any possible solution for this issue. Of course, it depends on the type of leftovers, but generally you just cannot feed the animals with the fried chicken or French fries. We've agreed that it depends mainly on the human's mindset – we should take a time and think about the amount of food we are able to eat. All of us should.

4.1   Question 2
Would it be possible to make sustainable processes (recycling, zero waste…) mandatory? If so, how
to control it?

We introduced our second question with the following introduction:

We chose this question because it's corresponding with the SDG's secondary goal number 5. We wanted to discuss if it should or could be possible to make sustainable processes mandatory and if so, how would we control that. In our opinion, making these approaches mandatory is not possible at the moment, because you cannot just command companies to behave in the specific way. Even controlling would be really challenging, time consuming and probably expensive. What do you guys think?

The discussion proceeded with several ideas:

We got a few ideas and observations, but eventually we've agreed, or at least the most of us, that making such a regulation wouldn't be possible at the moment. We came up with the idea of rewarding companies for following sustainable processes though. We think that every company shall be capable of getting a special marking based on whether it follows the sustainable steps or not. People then could recognize these companies and decide, which one they would like to pick or support. We've also agreed that people will believe more these companies, which are responsibly following sustainable approaches.

5   Evaluation

It was a great project and valuable experience for all of us, who took part. We are glad that we participated and that we had an opportunity to express our ideas and observations with another, even foreign students and teachers. We found out lots of news mainly about the sustainable processes in other countries such as Germany or Austria. We learned that many things we didn't even know about are actually quite common in foreign countries and they are still one step ahead, so we have a lot to learn from these well-mature countries. We also learned a lot about the new way of presenting – open space model. We have to admit that this way is much more productive than any other style of presenting we knew. We would like to say thank you to all the participants and mainly teachers, who prepared the whole project.

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7   Table of Images

UNIVERSITY OF WEST BOHEMIA IN PILSEN

FACULTY OF ECONOMICS

SDG Transformation SPACE

Open space discussion

12th goal of SDGs – Ensure sustainable consumption and production patterns

Jakub Lochař

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Pilsen 2021

Introduction

As part of the SDG Transformation SPACE project the authors of this document participated in a discussion (went on 26th of November 2021) carried out by the open space method. The discussion dealt with the 12th goal of Sustainable Development Goals which have been defined by the UN. The 12th goal of SDGs focuses on ensuring sustainable consumption and production. Participants of this discussion should have prepared two questions prior to the event. These questions should have been related to the objective which has already been written. Also, these questions should have referred to certain dilemmas within the objective itself or its subpoints.

The SDG Transformation SPACE project is a transnational project because of that participated by German students from the partner University of Weiden in Germany. The workshop should have been face to face at the University of Weiden in Germany but due to the epidemiological situation the discussion was held via online meeting at the Zoom app. Also, because of participants from different countries the communication was held in English.

In this document, the outcomes of the discussion are further elaborated on each of two questions defined by the authors. The questions are described in a way:

1. what led the authors to this question and their opinion;
2. examples of good and bad practice;
3. and then the outcome of the Open space discussion.

1 How would you motivate producers/business owners to act sustainably?

Consumers themselves cannot make a change to sustainability, especially within a short period of time. Moreover, consumers are everyday exposed to marketing campaigns which influence them to buy products in spite of the fact that they actually do not need it. Also, companies which act sustainable can disseminate knowledge about sustainability and educate their employees in it. So, it is needed to motivate producers/business owners to take steps towards sustainability. Anyway, why should companies take care about their impact not only on the environment, if they are not in some way motivated by the government for example. This includes the 6th subpoint of the 12th goal of SDGs which says: "*Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle*" (United Nations, n.d.). And there is a question: how?! Because of these facts the authors defined the first question: "*How would you motivate producers/business owners to act sustainably?*".

We can say that sustainability is becoming a big social issue. If this theme will continue to gain importance this element can gradually motivate companies to at least consider adjusting their business to reduce their impact. Why? Because there is the possibility that sustainability could have more influence to change customers' behaviour in a way that then customers would want to buy more sustainable products or products only from responsible companies.

One of the motivating things might be the simple realization of the company that it is also about its existence. Because if resources are depleted, if the planet will become uninhabitable or customers will reject its products because they do not behave sustainably (refer to previous paragraph). These possibilities may pose a threat for business.

The next possibility to motivate companies to be responsible is the government or other similar institutions. For example, companies which act sustainable could have tax benefits. Or on the other hand the government could do some legislative changes, restrictions, regulations and things like that. And if companies will not observe it, they could be punished because of that. The state, similar institutions, or even rich people can also motivate by creating special grant programs and if the companies want to use them, they undertake to do some sustainability activities.

What may also motivate companies is that, at present, sustainable behaviour can also mean a competitive advantage, a distinction from competition. Also, companies which act sustainable can gain some prestige or they can be ahead of the competition. From this perspective, companies should motivate themselves to be sustainable.

1.1 Examples of good practice

Companies can also motivate each other to act sustainable. As the Corona beer maker did, for example. He developed threaded cans, which allows individual cans to be screwed on top of each other and because of that he does not need an additional plastic material to pack the cans. This technology the Corona beer maker made publicly available, so any company can involve it in its production. Of course, if it uses cans (Michl, 2019).

On the other hand, there are companies such as SENS Foods or bio bakery Zemanka which since their start in business, have been motivated to behave sustainably. SENS Foods mainly produces powdered protein extracted from crickets. They offer dried protein in some flavours (banana, chocolate etc.) as a food supplement, protein bars and more. However, cricket farming uses many times less water than, for example, cattle farming for meat. Why this comparison? Because meat is the main resource for intake of natural proteins. The organic bakery Zemanka has been trying to be sustainable since its beginning. On the one hand, it buys material for its products from ecological farmers. On the other hand, it also tries to reduce the presence of waste in the system. How?! For example, it buys the rest of the brewer's grains from brewery Plzeňský Prazdroj, a. s. (Pilsner Urquell) and then it makes crackers from this material. Because of this activity we can say it does business by principles of circular economy (Asociace společenské odpovědnosti & Impact Hub ČR, 2021).

Generally, we can find many examples of good practice how to motivate companies act sustainable. And these motivations have something identical they have to have some benefits for the company. On the other hand, there also examples of practice which do not support or motivate to sustainable acting. These examples are introduced below.

1.2 Examples of bad practice

There may also be a situation where some companies may be over motivated because of the popularity of sustainability and certain legislation's rules and commit "greenwashing[1]" as it is called. As we can see in the action by McDonald's. As a result of the abolition of disposable plastics within the European Union and the increasing importance of environmental protection, the corporation has come up with an alternative to plastic straws. It has started to use paper straws. At the first look this seems as the right measure, but later it has shown that these paper straws are not possible to recycle at this time. In effect, McDonald's has inadvertently caused an increase in waste that cannot be recycled, which can be worse than recyclable plastic (Seznam Zprávy, 2019).

The government also can be a barrier in efforts of companies to act sustainable and because of that the government can demotivate them. As an example, is the situation in the Czech Republic, when some beverage producers have asked the government of the time to create certain legislation for a system of reversible PET bottles and cans, apparently the same as the government in Germany and other countries have set (Mattoni 1873, 2021). The beverage producers were prepared to negotiate with the government, cooperate, etc. They themselves would bear the costs of the system in practice. All they demanded was to introduce it in legislation. In the end the government rejected the effort. It has created a novella of bill about packaging which does not allow to create an advance system for reversible PET bottles and cans. And also, this novella of bill about packaging tightens up rules for a voluntary implementation of the advance system for reversible PET bottles and cans. Despite the fact that there are many PET bottles in nature or people burn them in the stove at home. The implementation of the advance system for reversible PET bottles and cans could help to reduce these things (A DOST!, 2020).

We could find more examples, but the biggest one of them it is: not support or motivate anyone to act sustainable.

1.3 Outcome of the Open space discussion

At the beginning of the discussion there was a brief talk about if it is needed to

motivate companies to act sustainable at all. None of the participants disagreed and there was broad agreement that it is not possible to expect that only consumers with their behaviour could encourage companies to act sustainably. The question of how to motivate them has been discussed for the rest of the time.

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[1] greenwashing means: „*behaviour or activities that make people believe that a company is doing more to protect the environment than it really is*" (Cambridge University Press, n.d.)

One of the participants contributed to the discussion by thinking that at a time when the planet is de facto dying and there is no need for a change in thinking by the companies themselves, there must be an incentive from the government. Then she suggested that the government could provide some grant's programs or tax benefits. Also, she said that the government should be more active in creating a better environment for companies which behave sustainably. These facts are consistent with the text which is in the introduction to Chapter 1 of this document.

During the discussion it was mentioned that the biggest problem is also the focus of companies only on generating profit and on increasing him. This happens in many cases without regard to impact and it destroys sustainability efforts. One participant responded by thinking that most firms might be less sceptical if they would see the financial or non-financial benefits that sustainable business could bring. After that the participant added that the benefits could be shown to companies by the government or other institutions. Also, the participant mentioned that it considered the most important benefits:

- more efficient production system;
- brand reputation;
- employee involvement and more.

As a reaction to the mention of the institutions one of the participants said that these institutions could be banks, for example. Also, he mentioned that it could also be investors who can motivate companies to be sustainable. This mention also is consistent with the text which is in the introduction to Chapter 1 of this document. And another fact which supports it is the article which has been ascertained later and which says: "*Czech banks plan to offer green mortgages. At the same time, they will discontinue giving credit to companies which are a burden for the environment.*" (Miler & Mašek, 2021) Then there is an advertising spot from Erste Group, which exhort to behave sustainably, and this spot can be found on YouTube (https://www.youtube.com/watch?v=VWJ-owque-Y).

It was also mentioned that another thing that can motivate a company to behave sustainably is attracting new employees or retaining existing ones. Because there is a part of the population that looks at whether a potential employer behaves responsibly when this group is looking for a job. And employees for whom sustainability is important may in future give their notice because their employer does nothing for sustainability. So, this fact could be a threat for these companies.

During the discussion one of the participants said that companies can be motivated by the business model itself in which sustainability is a constituent of it and the company generates profit already with added value of sustainability. For example, as it is in the case when firms employ the principles of the circular economy in their business model. This is exactly in compliance with the text which have been mentioned above in the part – 1.1 Examples of good practice, specifically SENS Foods and bio bakery Zemanka.

The following thoughts emerged from the discussion:

1) It is a need to motivate companies in some way, because without the incentive they themselves will not be very willing to behave sustainably.

2) A change in attitude and mindset of companies is needed in a way that they would not see only the profit, but also the impact of their business on the planet.

The main entity that should motivate is the government. And it should use various means, such as: tax benefits, grants, legislation and more. At the same time, the government should be more active in promoting sustainability in companies and create a better environment for companies that already behave sustainably. Other subjects who could motivate firms to behave sustainably may be financial institutions or investors themselves, who have their own tools to demand some sustainable behaviour from companies.

1) Companies themselves should change their attitude and motivate themselves to be sustainable. For example, because of the potential future problem of hiring new staff.

2) Perhaps more firms would be willing to behave sustainably if they would see the financial and non-financial benefits of sustainable behaviour. For example, it could be a possibility to draw various subsidies, gain prestige, have competitive advantage and others.

2 Do you think, that it is important to educate children in the area of environment and sustainability? If so, why.

Everything we do in life we do on the basis of some knowledge. That's why we asked ourselves how we can actually behave sustainably when we don't know what it means and how we should be doing it.

Just as we do not expect children to learn to write, read, or calculate complex mathematical equations on their own, we cannot expect them to behave sustainably on their own. If children are not educated in this area and do not see a pattern of behaviour from their parents, it is very likely that they will act the same way as adults. This idea led us to the question of whether it is important to educate children, and we wanted to start a discussion about whether only children or even adults should be educated. At the same time, we were interested in how other discussants imagine that such teaching should look like.

The current education system in the Czech Republic does not take the topic of sustainability very seriously. In primary and secondary schools, this topic is taken as a cross-sectional ecological education, which means that it is taught across different subjects. Nevertheless, there are opportunities to learn comprehensively and practically on this topic. This can be, for example, at children's camps, leisure clubs or various projects and programs of non-profit or other organizations. As an example of a good practice, we found a few.

2.1 Examples of good practice

The first example is the School for Sustainable Living program, which connects primary and secondary school teachers and students with the local community. This program has been running since 2004 and, based on it, students, teachers and the local community create projects that support the sustainable development of the place in which they live. The great benefit is that the students are directly involved in the projects and see that it is possible to think and act differently and thus instil important patterns of behaviour for the future. Among the events that are organized on the basis of the program are planting greenery in the area, intergenerational lectures, joint gardening, etc. (Středisko ekologické výchovy SEVER, n.d.a)

Another example is the Clean Up Czechia initiative. This initiative is a volunteer cleaning event that takes place across the country. It was founded with the aim of cleaning up black dumps and clutter in towns, villages and nature in the Czech Republic. Tens of thousands of people take part in this event every year. Schools for which the association has a manual on how teachers can motivate students and how to organize such an event with them can also take part. In this way, students can see the reality behind waste management and are thus motivated to sort and handle waste properly. However, in our opinion, it would have the strongest effect if the children went to the cleaning together with their parents. This could then motivate the whole family to find solutions to reduce the waste produced in the household in which they live together. (Spolek Ukliďme Česko, 2021; Wikipedie, 2021)

The last example of good practice comes from the northern part of the Czech Republic, which is reflected in the name of the association - Centre for Environmental Education NORTH. This centre was created by merging 4 non-profit organizations in the north of

the republic. Their mission is as follows: "We strive to deepen responsible behaviour towards nature and the planet and between people and towards sustainable living. Through education and training based on experience, practical activities, participation, direct contact with the world around us and connecting different disciplines." The association's activities consist of organizing one-day or multi-day residential training programs and long-term educational projects. They also offer courses, seminars, consultations or teaching aids for teachers and educational events for the public. It is beneficial for students to learn the elements of sustainability in a fun way together with other friends, which they can then apply to their daily lives or pass them on in the family (Středisko ekologické výchovy SEVER, n.d.b).

There are many examples of good practice, whether it is done by groups of more people or by individuals. Every effort counts. If children see the effort of our adults, we do not have to worry about their behaviour in the future. Which brings us to examples of bad practice.

2.2 Examples of bad practice

As an example of bad practice, we perceive a generally negative attitude and lack of interest about this topic. An example is the primary and secondary schools we studied at. We know that it has been back several years, but even then, there was a great deal of awareness, for example, about waste sorting. However, there were no waste bins at any of the schools where we studied. There was also no teacher to teach us about this topic, no specific subject. According to the information we have from current students, nothing has changed in this direction in secondary schools and students still have nowhere to get the necessary information.

2.3 Outcome of the Open space discussion

We also discussed the topic of education with students from the University of Weiden. First, we asked other discussants if they think that educating children is important. One of the participants replied that in his opinion it is very important to educate the current young generation, as it is the generation that will be most affected by climate change and other environmental impacts.

We followed up on this question by asking what others think this education should look like and whether it should be taught only in schools or during extracurricular activities such as children's clubs, etc. One of the participants thinks that a big change in the education system in the Czech Republic must take place first. According to her research for the bachelor's thesis, the Czech education system does not sufficiently include the issue of sustainability, and therefore awareness of it in secondary and primary schools is very low. She then said that in her opinion, the topic of sustainability is so wide that in addition to teaching in schools, it should also be teached by leaders of extracurricular activities. Whether it's sports, art or other circles, the topic of sustainability affects each of them. One of the participants even said that he would teach children about these topics already in kindergarten.

One of the participants further stated that the best way to teach children to behave sustainably is to show them. Children inherit patterns of behaviour mainly from their role models, which are usually the family members and teachers. Therefore, especially teachers should set an example for children at school. At the same time, it is important that parents are involved in this process, as children take the most from them. Therefore, according to the discussants, it would be appropriate to create some circles where parents with

children could participate together.

The discussants further noted that education on these topics should be for every age group, not only children, but also adults or pensioners. The discussants responded by saying that it is difficult to engage the older generation with these topics, as they mostly argue that they will not be here for a long time and therefore they are not interested. At the same time, the average age of politicians is also high, so we cannot be surprised that changes from the state leadership are not coming as we would imagine them.

Together with the discussants, we came to the following conclusions:

1) We think that the education of the young generation is very important for the future of our society, but at the same time we also thing the education of all other age groups is important. It does not necessarily have to be an education in the form of studying at school, but for example, informing about the issue through the media would be helpful.

2) There should be some change in the education system so that the curricula for schools work more closely with these topics and for schools to be involved in various projects. Education should take place both in the form of a subject in schools and through extracurricular activities.

3) Both teachers and parents should be involved in educating children. We think that it would be appropriate to involve parents in the educational process, for example in the form of some projects or courses.

4) We should try to connect generations more so that they can inspire and learn from each other.

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Ostbayerische Technische Hochschule
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Ausarbeitung zum Workshop

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Anhangverzeichnis

Anhang 1: Unterziele zu SDG 8

Anhang 2: Unterziele zu SDG 12

Anhang 3: Begriffsdefinitionen

1 Einführung in die 17 UN-Klimaziele

Die 17 UN-Klimaziele, auch SDGs genannt, sind durch die UN entwickelte Ziele, die eine nachhaltige Entwicklung in den verschiedensten Bereichen anstreben. Die Ziele vereinen die Bekämpfung des Klimawandels und Erhaltung der Wälder und Ozeane unter dem Aspekt der Armuts- und Ungerechtigkeitsbekämpfung, Verbesserung der Gesundheitsversorgung wie Bildung und ein Antreiben des wirtschaftlichen Wachstums. Die Ursprünge der SDGs haben sich über die Jahre seit 1992 aus den verschiedensten Dokumenten und Vereinbarungen heraus entwickelt. So kam es 2015 schließlich zu der konkreten Festlegung und Ausarbeitung der 17 Ziele, sowie einer Selbstverpflichtung durch alle UN-Mitgliedsstaaten zu diesen. Die Umsetzung der SDGs ist dabei auf das Jahr 2030 festgelegt, der aktuelle Stand und Informationen zu der Entwicklung können jederzeit auf der offiziellen Website der Vereinigten Nationen aufgerufen werden. [2]

1.1 SDG 8: Menschenwürdige Arbeit und Wirtschaftswachstum

Weltweit sind mehrere Millionen Menschen arbeitslos - andere wiederum arbeiten hart, aber verdienen zu wenig für ihren Lebensunterhalt. Um Arbeitsplätze zu schaffen, muss die Wirtschaft prosperieren. Doch es ist nicht Sinn und Zweck, Arbeit um jeden Preis zu fördern. Das Wirtschaftswachstum allein ist nicht ausreichend, um einen nachhaltigen Wohlstand aller zu ermöglichen. Es geht vielmehr um qualitatives Wachstum, welches nachhaltige Fortschritte in wirtschaftlicher, sozialer sowie auch in ökologischer Hinsicht anstrebt. Diese Ansichten wurden im SDG 8 abgezielt (siehe Unterziele zu SDG 8 im Anhang 1). Es beinhaltet ein dauerhaftes, breitenwirksamen und nachhaltiges Wirtschaftswachstum, produktive Vollbeschäftigung und eine menschenwürdige Arbeit für alle. Es spricht demnach von inklusivem und nachhaltigem Wirtschaftswachstum. [3]

1.1.1 Aktueller Stand SDG 8

Die anhaltende Corona Pandemie betrifft die ganze Welt und so auch die gesamte Weltwirtschaft. Die unterentwickelten Länder verloren im Jahr 2020 rund 1,3 Prozent des Bruttoinlandsprodukts, während diese im Jahr zuvor fast 5 Prozent des BIPs dazugewonnen haben. Aber auch in den besser entwickelten Ländern zeigt sich, dass das BIP eine Rezession auferlegt. Dies ist vermutlich darauf zurückzuführen, da vor allem Beschränkungen im Freizeitbereich, wie Gastronomie, Beherbergung, Kultur und Sport, gegolten haben. Auch das Maß an geleisteten Arbeitszeiten ging zurück, Arbeitsplätze gingen verloren und die Unternehmensumsätze sanken um mehr als 25 Prozent. Am stärksten betroffen davon sind die kleinen und mittleren Unternehmen, Arbeitnehmer/innen in informeller Beschäftigung, Selbstständige, sowie Tagelöhner. Mit Ausblick auf die Zukunft, ist es erforderlich, dass die Entwicklung des Privatsektors gefördert werden muss. Auch Zugang zu Finanzdienstleistungen soll vor allem für kleine Unternehmen gewährt werden und vor allem muss das Wirtschaftswachstum vom Ressourcenverbrauch gelöst werden. Hinsichtlich des menschenwürdigen Arbeitens sollen Menschenrechte gestärkt werden, Kinderarbeit und vor allem deren Ursache eliminiert werden und Soziale Standards gewährleistet werden. Mit diesen Punkten würde die Welt einen Anfang schaffen, das SDG 8 vollständig zu erreichen. [3]

1.2 SDG 12: Nachhaltiger Konsum und Produktion

Zwischen den Jahren 2010 und 2017 erhöhte sich der Verbrauch an Ressourcen von fast 73 auf knapp 86 Milliarden Tonnen und auch der Elektronikmüll hat um fast 40 Prozent zugenommen. Salopp gesagt, die aktuellen Produktions- und Konsummuster sind nicht zukunftsfähig und müssen verändert werden, denn der ökologische Fußabdruck der Menschheit wird immer größer und muss gestoppt werden. Um die Bedürfnisse der steigenden Weltbevölkerung nachhaltig abdecken zu können, Effizienz und Ressourcenschonung von großer Bedeutung. [4] Auf diese Felder bezieht sich SDG 12 mit dem Ziel, ein nachhaltiges Konsum- und Produktionsmuster zu gewähren (siehe Unterziele zu SDG 12 im Anhang 2).

1.2.1 Aktueller Stand SDG 12

Die weltweiten Folgen der Covid-19 Pandemie haben erhebliche Auswirkungen für den Konsum und die Produktion. Es gab Unterbrechungen in den Lieferketten und Schließungen von Geschäften, Restaurants und Hotels. Viele Agrarprodukte wurden in größeren Mengen vernichtet, aufgrund dieser unterbrochenen Lieferketten und geschlossener Gaststätten. Dennoch besteht die Chance, dass der Trend für regionale und biologische Produkte steigt. Beispielsweise nahm
der Umsatz von Bioprodukten in der Krise deutlich zu. [5]

Dennoch ist zu erwähnen, dass für die Zukunft die vorhandenen Ressourcen verantwortungsvoller genutzt werden müssen. Im Bereich des täglichen Lebens müssen die negativen Sozial- und Umweltwirkungen des Konsums begrenzt werden. Für Unternehmen müssen klare Regeln gesetzt werden, welche die Einhaltung von Nachhaltigkeits- und Menschenrechtsstandards – entlang der Produktionskette – sicherstellen. Verbraucher und Verbraucherinnen müssen über die nachhaltige Kaufentscheidung aufgeklärt werden. Und auch Bund und Länder müssen eine nachhaltige Produktionsweise fördern. Nur wenn alle Parteien, sei es Verbraucher, Unternehmer oder Bund, an einem Strang ziehen, kann es gelingen, ein nachhaltiges Konsum- und Produktionsmuster zu erreichen. Denn Nachhaltigkeit ist ein Thema, dass die ganze Gesellschaft betrifft. [6]

2 Zielkonflikte

Da die Ziele der UN viele verschiedene Bereiche abdecken, ist es klar, dass diese teilweise in Konflikt zueinanderstehen können. Um mögliche Zielkonflikte besser verstehen zu können, werden im Nachfolgenden beispielhaft mögliche auftretende Zielkonflikte am Beispiel von Fackelmann aufgezeigt.

Die vorherrschenden Produktions- und Konsummuster sind nicht zukunftsfähig und schon gar nicht bei fortschreitender Bevölkerungsanzahl. Das stellte der „Club of Rome" bereits 1972 in dem Bericht „Die Grenzen des Wachstums" fest. Die internationale Staatengemeinschaft folgte dieser Erkenntnis, indem sie beim Erdgipfel von Rio 1992 das Ziel einer nachhaltigen Entwicklung festlegten und daraufhin sowohl Millenniumsentwicklungsziele (MDGs) als auch die Nachhaltigen Entwicklungsziele (SDGs) entwickelte. Die Entwicklungsländer weisen jedoch noch einen großen Nachholbedarf bei der Produktion und dem Verbrauch von Gütern auf. Vor dem Hintergrund, dass die Zahl der Hungernden und „Energielosen" weiterhin unverantwortbar hoch ist, kann die Lösung jedoch nicht in der einfachen Drosselung des Konsums liegen. Vielmehr muss es darum gehen, das gesamte Wirtschaftssystem auf Nachhaltigkeit umzustellen. Nur so ist sicherzustellen, dass die Menschen Zugang zu dem haben, was sie für ein selbstbestimmtes und sicheres Leben

benötigen, ohne dabei unseren Lebensraum überzustrapazieren. [4]

Aufgrund der zuvor erwähnten Problematik, dass nach Auffassung des vbw die Lösung nicht einfach in einer Drosselung des Konsums zu finden ist, wird nachfolgend Bezug zur aufkommenden Wachstumskritik genommen. In Folge des bereits erwähnten Berichtes des Club of Rome setzte auch eine allgemeine Wachstumskritik ein. Das kontinuierliche Streben nach Wirtschaftswachstum wird als logische Schlussfolgerung in Frage gestellt. Ausgangspunkt dieser Überlegung ist das limitierte Vorkommen und Nachwachsen natürlicher Ressourcen. Es wird unterstellt, dass jede Produktion mit dem Verbrauch von Ressourcen einhergehe und somit ein kontinuierliches Produktionswachstum auch einen stetig steigenden Ressourcenverbrauch zur Folge hat. Das hat zur Konsequenz – wenn die Regenerierbarkeit und Effizienzsteigerungen außer Acht gelassen werden – dass der Ressourcenverbrauch nur durch einen Verzicht auf Wachstum gebremst werden kann. Darüber hinaus fließt zunehmend ein moralischer Aspekt in die Diskussion ein; die Wachstumskritik wird mit einer Konsumkritik vermengt. Diese impliziert einen materiellen Überfluss, in dem zumindest breite Teile der Bevölkerung (in Industriestaaten) leben, somit könne und solle auf weiteren zusätzlichen materiellen Wohlstand verzichtet werden. Dem Liegen Glücks- und Zufriedenheitsforschung zugrunde, die feststellten, dass die ab einem bestimmten Einkommen wahrgenommene Zufriedenheit vor allem von immateriellen Faktoren abhängt, zu denen u.a. auch eine intakte Umwelt zähle. In den vergangenen Jahren ist zudem der soziale Aspekt des Wachstums in den Vordergrund getreten. Der Begriff des „inklusiven Wachstums" beschreibt ein anzustrebendes Wirtschaftswachstum, das in seiner Wirkung nicht auf wenige beschränkt ist, sondern bei breiten Bevölkerungsschichten ankommt und gesellschaftliche Teilhabe aller mit sich bringt.

Nach Auffassung der vbw bleibt jedoch Wirtschaftswachstum die Grundvoraussetzung für die Verfolgung umwelt- und sozialpolitischer Ziele. Dennoch gehören Wachstum und Nachhaltigkeit zusammen, denn auch Nachhaltigkeit ist eine Voraussetzung für langfristiges Wachstum, weil die Bedürfnisbefriedigung nicht die Möglichkeiten zukünftiger Generationen gefährden darf. Die vbw beurteilt das Wachstum in Deutschland als nachhaltig, da die soziale Marktwirtschaft als nachhaltige Wirtschaftsordnung fungiert. [11]

Dabei handelt es sich jedoch um eine Interpretation einer eher liberal geprägten Vereinigung, Folglich sind auch deutlich kritischere Stellungnahmen zu finden, die wie bereits erwähnt in der Verbindung von Nachhaltigkeit und Wirtschaftswachstum einen Zielkonflikt bemängeln.

3 Diskutierte Fragestellungen und mögliche Lösungsansätze

Wie in dem vorherigen Kapitel bereits aufgezeigt existieren Zielkonflikte. Eine der wohl komplexesten Fragestellungen die sich hieraus ergibt ist inwieweit das ständige wirtschaftliche Wachstum in Konflikt mit unseren verfügbaren Ressourcen und steht, insbesondere, da diese bereits in vielen Bereichen erschöpft sind. Oben wurde diese Fragestellung bereits teilweise diskutiert und es lässt sich feststellen, dass kein dauerhaftes wirtschaftliches Wachstum möglich ist, da unsere Ressourcen schlichtweg endlich sind. Um diese widersprüchlichen Pole zu vereinen müsste ein Umdenken aller stattfinden im Bezug auf unser Konsumverhalten, wie auch ein Umdenken der Unternehmen in der Art und Weise wie Güter hergestellt und verkauft werden. Hierfür wäre ein verlangsamtes Wirtschaftswachstum notwendig, da sonst zum einen eine Umstellung nicht möglich wäre und zum anderen auch der Aufbau nötiger Strukturen für eine nachhaltige Produktion nicht mithalten könnte.

Die zweite Frage, die wir im Rahmen des Workshops diskutiert haben, behandelt die Thematik, ob eine Schädigung der Umwelt bei einem stetigen Wirtschaftswachstum überhaupt vermeiden werden kann. Diese Frage ist besonders interessant, da sich grundsätzliche Annahmen in Frage stellt. Auch nach ausführlicher Diskussion ist die Fragestellung nur schwierig zu beantworten und es lassen sich lediglich Empfehlungen geben, wie man ein wirtschaftliches Wachstum nachhaltig gestalten kann. Allen voran sollten bereits existierende nachhaltige Innovationen genutzt werden, wie auch weiterhin erforscht und entwickelt werden. Natürlich kann man allein durch Innovationen kein nachhaltiges Wirtschaftswachstum erreichen. Die grundlegende Voraussetzung ist hier die Veränderung der Denkweise der Menschen. Ein globales Umdenken ist sehr schwierig zu erreichen und kann nur langsam von statten gehen, da jeder einen unterschiedlichen Wissens- und Entwicklungstand hat. Hier könnte es hilfreich sein, wenn bereits hoch entwickelte Länder, wie zum Beispiel Deutschland als Vorbild fungieren und somit anderen Ländern Möglichkeiten zur Veränderung aufzeigen, sowie diese unterstützen.

4 Fazit

Abschließend lässt sich als Essenz aus der obigen Diskussion ziehen, dass völliger Einklang zwischen den verschiedenen Zielen nur wenig realistisch ist und lediglich bestmöglich angestrebt werden kann, wie die Ausführung der Lösungsansätze zeigt. Dennoch sollte hier die Bestrebung nicht vernachlässigt werden und bereits hochentwickelte Länder sollten sich bemühen mit einer Vorbildfunktion voranzuschreiten, denn die Basis für eine Veränderung ist und bleibt ein nachhaltiges Umdenken in unseren bestehenden Verhaltensweisen. Das betrifft dabei Unternehmen wie Einzelpersonen gleichermaßen.

Anhang

Anhang 1: Unterziele zu SDG 8

In der Agenda 2030 haben die vereinten Nationen folgende Unterziele zum SDG 8 formuliert Wiechman

8.1:   Aufrechterhalten des nachhaltigen Wirtschaftswachstums

8.2:   Erhöhung der wirtschaftlichen Produktivität durch Modernisierung und Innovation

8.3:   Begünstigung des Wachstums von Kleinst- bis Mittelunternehmen durch Zugang zu Finanzdienstleistungen

8.4:   Verbesserung der Ressourceneffizienz und Entkoppelung von Wirtschaftswachstum und Umweltzerstörung bis 2030

8.5: Erreichung von produktiver Vollbeschäftigung und menschenwürdiger Arbeit für Frauen, Männer und junger Menschen in Zusammenhang mit gleicher Vergütung für gleichwertige Arbeit

8.6:   erhebliche Verringerung des Anteils erwerbsloser Jugendlicher, welche nicht in Schul- oder Berufsausbildung sind

8.7:   sofortige Abschaffung von Zwangsarbeit, moderner Sklaverei, Kinderarbeit, Kindersoldaten und Menschenhandel

8.8:   Schutz für Arbeitsrechte und Schaffung einer sicheren Arbeitsumgebung für alle

8.9:   Förderung des nachhaltigen Tourismus in Zusammenhang mit Schaffung von Arbeitsplätzen und Förderung von lokalen Produkten

8.10:   Erweiterung des Zugangs zu Finanzdienstleistungen für alle

8.a: Erhöhung der Unterstützung für Entwicklungsländer

8.b: Erarbeitung einer globalen Strategie für Jugendbeschäftigung

Anhang 2: Unterziele zu SDG 12

Diese Probleme werden in SDG 12 behandelt und es wurden folgende Unterziele verankert: (GmbH)

12.1: Sicherstellung des nachhaltigen Konsums- und Produktionsmusters

12.2: effizientes und nachhaltiges Nutzen von natürlichen Ressourcen

12.3: Verringerung der Nahrungsmittelverschwendung und Ernteverlustes

12.4: Garantie schaffen für umweltverträglichen Umgang mit Chemikalien und Abfällen

12.5: deutliche Verringerung des Abfallaufkommens bis 2030

12.6: Ermutigung für große und transnationale Unternehmen zur Nachhaltigkeit schaffen

12.7: Öffentliche Beschaffung nachhaltig gestalten

12.8: Verankerung des Bewusstseins für Nachhaltigkeit bei allen Menschen

12.a: Unterstützung für Entwicklungsländer

12.b: Schaffung eines nachhaltigen Tourismus

12.c : Marktverzerrungen, aufgrund ineffizienter Subventionierung fossiler Brennstoffe, beseitigen

Anhang 3: Definitionen

Nachhaltigkeit

Das Wort Nachhaltigkeit stammt ursprünglich aus der Forstwirtschaft und bedeutet, dass nur so viel Holz geschlagen wird, wie nachwachsen kann. In jüngster Vergangenheit entwickelte sich die Nachhaltigkeit zu einem der normativen Schlüsselbegriffe des 21. Jahrhunderts und beinhaltet das Ziel, die Erde als dauerhafte Lebensgrundlage zu erhalten. Somit ergibt sich per Definition, dass die Befriedigung der heutigen Bedürfnisse nachhaltig ist, wenn zukünftigen Generationen nicht die Lebensgrundlage entzogen wird (Suchanek, et al., 2021).

Wirtschaftswachstum

Als Wirtschaftswachstum kann allg. die Zunahme der wirtschaftlichen Leistungsfähigkeit einer Volkswirtschaft bezeichnet werden. Die Leistungsfähigkeit wird dabei durch verschiedene Größen ausgedrückt, zumeist mittels des Bruttoinlandsproduktes. Somit bezeichnet wirtschaftliches Wachstum eine Steigerung der inländischen Produktion, bzw. des im Inland erzielten Einkommens. Für dieses Wachstum bestehen grundsätzlich zwei Möglichkeiten, zum einen kann die Steigerung aufgrund verbesserter Auslastungen der Produktionskapazitäten durch vermehrten Einsatz der Produktionsfaktoren erfolgen, dem sog. Auslastungseffekt, oder zum anderen durch eine Ausweitung der Produktionskapazitäten, dem sog. Kapazitätseffekt (Schäfer, 2018).

Das BIP als Wachstumsmaßstab wird jedoch aus folgenden Gründen kritisiert (Schäfer, 2018):

- Unzureichende Erfassung der erbrachten Leistungen (Haushalt, Schattenwirtschaft, ...)
- Unzureichende Berücksichtigung von bestimmten qualitativen Eigenschaften
  → Qualitatives Wachstum vs. quantitatives Wachstum
- Problematik der zunehmenden Beeinträchtigung der Umwelt

Das BIP ist dennoch eine sinnvolle Kennzahl zur Messung von Wachstum und Wohlstand. Es bemisst alle Güter und Dienstleistungen, die produziert und erbracht werden, um die Bedürfnisse der Menschen zu befriedigen. Zusätzlich gibt die Erfassung der Güter und Services, für die ein Preis bezahlt wurde, Aufschluss darüber, wie viel Einkommen erwirtschaftet wurde (Brossardt, 2020).

Nachhaltiges Wirtschaftswachstum

Nachdem die einzelnen Begrifflichkeiten ihrer Bedeutung zugewiesen wurden, gilt es nun den zusammengesetzten Begriff des nachhaltigen Wirtschaftswachstums zu definieren. Die wirtschaftliche Stabilität und die Nachhaltigkeit der ökonomischen Entwicklung genießen höchste Priorität und sind zentrale Themen der wissenschaftlichen Debatte. Die derzeitige Form des Wirtschaftens in vielen Industrieländern ist nicht nachhaltig, wie es der globale Klimawandel schmerzhaft aufzeigt (Martsch).

Doch was bedeutet der Begriff nachhaltiges Wirtschaftswachstum? Die Vereinigung der Bayerischen Wirtschaft e.V. bedient sich hierzu dem Drei-Säulen-Modell, bei dem die drei Ziele gleichrangig nebeneinanderstehen (Schulz, 2020).

Quelle Abbildung 2: https://utopia.de/ratgeber/drei-saeulen-der-nachhaltigkeit-modell/

Jedoch wird die Gleichrangigkeit der drei Nachhaltigkeitsziele von Kritikern bemängelt, da aus ihrer Sicht das Ziel der ökologischen Nachhaltigkeit Vorrang genießen müsste, weil der dauerhafte Bestand der natürlichen Ressourcen die Basis für ökonomische und soziale Stabilität sei. Jedoch ist die wirtschaftliche Leistungskraft die Voraussetzung für die Erreichung der ökologischen und sozialen Ziele. Somit ist ohne Wirtschaftswachstum weder die soziale noch die ökologische Nachhaltigkeit mö

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ESD for 2030:

SDG TRANSFORMATION SPACE

[Sensibilisieren] [Potentiale Aktivieren] [Chancen Ergreifen]

SS 2021/22

Mögliche Lösungen der identifizierten
Nachhaltigkeitsdilemmata

ESD for 2030:

SDG TRANSFORMATION **SPACE**

[**S**ensibilisieren] [**P**otentiale **A**ktivieren] [**C**hancen **E**rgreifen]

2nd Open Space Meeting

Date: 17. 05. 2022, 10.00 – 14.00

Place: Multifunktionsraum der OTH Amberg-Weiden

Supervisor: Prof. Dr. Lisa Ranisch

Coach: Dipl.-Ing. Dita Hommerová, Ph.D., MBA

10.00 – 10.15 Welcome and Registration 10.15 – 10.25 Key Information For The Day	
10.25 – 10.50 **Maintaining the pace of economic growth (SDG 8), how can we reduce CO2 emissions from environment (SDG 13)? [Conflict point: Economic growth leads to more CO2 emission.]** Akter Nusrat, Forid Sheikh, Islam Md Nazmul, Mahiuddin Md, Rahaman Md Mosiur, Rahman Naimur	10.25 – 10.50 **How can we ensure energy efficiency (SDG 7) while at the same time contributing to responsible production (SDG 12)?** Hira Ruksana Rashid, Islam Sofiqul, Rahman Muhammad Atiqur, Rahman Safiqur, Saha Sowrav
10.50 – 11.15 **Can overpopulation have an effect on industrialization as it is equally connected to production and poverty?** Akakpo Gideon Kwame, Khanam Tahmina, Rahman Md Jawadur, Shikder Noushin, Sutradhar, Nayan	10.50 – 11.15 **How can air pollution be controlled in order to preserve air quality for future generations? (SDG 9)** Tereza Simsonová, Daniela Volfová
11.15 – 11.40 **Introducing sustainable options and new alternatives, such as green energy like hydrogen fuel, would be extremely expensive to produce or provide services. And that will eventually raise the pricing of commodities. Now our question is – "If we**	11.15 – 11.40 **By constructing huge dams on rivers for hydro energy. Aren't we affecting life below water?**

are solely focusing on environmental uplifting, are we neglecting to eradicate zero hunger or no poverty agenda of SDG?" Akhtaruzzaman Akhtaruzzaman, Lasker Saadman, Reza Tanvir, Sarker, Nayan Chandra, Uddin Ashfaq, Vaghasiya Jenish Rameshbhai	Islam Md Tarikul, Khan, Ashraful Kamran, Rahaman Mohaiminur, Rajat Kumar Rajat Kumar, Saili Gaurav
11.40 – 12.05 **How can we make a safe and healthy environment below the water (SDG 14) without compromising economic growth (SDG 8)? [Conflict Point: Different industrial products are polluting water what makes life below water more difficult.]** Akter Nusrat, Forid Sheikh, Islam Md Nazmul, Mahiuddin Md, Rahaman Md Mosiur, Rahman Naimur	11.40 – 12.05 **What could be the solutions to minimize green house gas emissions (SDG 13) when following SDG 12 (responsible production)?** Hira Ruksana Rashid, Islam Sofiqul, Rahman Muhammad Atiqur, Rahman Safiqur, Saha Sowrav
12.05 – 12.45 Lunch	**12.05 – 12.45 Lunch**
12.45 – 13.10 **How can we direct climate change in a positive way by at the same time ensuring SDG 9?** Akakpo Gideon Kwame, Khanam Tahmina, Rahman Md Jawadur, Shikder Noushin, Sutradhar, Nayan	12.45 – 13.10 **How can developing countries be supported in the development and enhancement of their scientific and technical capacities and their support aimed at achieving more sustainable ways of production and consumption? (SDG 12)** Tereza Simsonová, Daniela Volfová
13.10 – 13.35 **Implementing new policies like agriculture policies on the basis of environmental need, will bring down the already**	13.10 – 13.35 **Ships like floating industries which cause huge carbon dioxide emissions. What alternative options can shipping**

established industries and also slow down the economic growth. Our question is now: "How do we achieve a balance between maintaining progressive environmental policies while also improving the economic condition of a specific region?"	companies adopt to reduce the adverse effects caused by these floating giants?
Akhtaruzzaman Akhtaruzzaman, Lasker Saadman, Reza Tanvir, Sarker, Nayan Chandra, Uddin Ashfaq, Vaghasiya Jenish Rameshbhai	Islam Md Tarikul, Khan, Ashraful Kamran, Rahaman Mohaiminur, Rajat Kumar Rajat Kumar, Saili Gaurav

13.35 – 13.55

Can we expect increased demand for renewable energy sources in connection with the military conflict in Ukraine?

Lenka Porazilová

13.55 – 14.00	**Closing Ceremony**

SDG 9: In what way can we regulate air pollution in order to leave good air quality for future generations? This question may relate to topics SDG 9 and 13.

A description of the question:
The discussion will focus on ways in which primarily industrial corporations, but also ordinary people can contribute to at least partly ensuring good air quality for future generations.

The aim of the discussion is to find a joint solution that could solve problems related to air pollution.

Participants will consider ways of reducing emissions that have a major impact on the climate and global warming.

Notes from the discussion:

- o Eliminate combustion engines in automobiles and switch exclusively to electric cars
- o More options for waste disposal and its subsequent sorting
- o More extensive use of public transport

Summary:

Although the discussion on this issue was not very extensive, it offered several interesting opinions and ideas about how to regulate air pollution.

For everyone, the first obvious goal was the use of electric vehicles.

When the suggestion related to electric cars was made, there was a discussion whether electric vehicles are the right path to choose, as the disposal of one disused battery from an electric car results in air pollution equivalent to that caused by ten combustion engines over the course of their entire lifetime. In the end, everyone agreed that electric mobility is one possible option, but another and even better way of regulating environmental pollution is the use of public transport.

The proposal of more extensive use of mass transit led to a discussion in which everyone agreed that there is no need to just use electric cars, but it would be desirable to also take advantage of public transport on a larger scale, because there is a big difference between the pollution caused by a bus transporting 30 people compared to all 30 people traveling in their own passenger vehicles, which will result in the environment being polluted on the same route thirty times instead of just once.

The last suggestion centered around the use of garbage cans and waste dumpsters. A proposal was made to increase the number of garbage cans available in cities and also mainly in coastal areas, which would reduce the amount of waste presenting a burden for the environment. This would also prevent the waste from getting into the sea, where it contaminates the water and endangers marine species.

However, this proposal was not very successful, as most participants agreed that whether someone will throw away their waste in a garbage can or instead litter the ground or dispose of it in the sea is entirely up to one's nature.

Towards the end of the discussion, one of the participants added that if we do not want to pollute the environment at all, we should go back to living like in ancient history, in prehistoric times, when there were no cars or any materials that could pollute the air and the environment in general.

Ostbayerische Technische Hochschule
Amberg-Weiden

A Project on
SDG-12 Sustainable Production and Consumption.

Submitted By:

Group 3: SDG-12

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Submission date: 17 July 2022

Date of Submission:

17 July 2022

Table of Contents:

Introduction

This report is a partial requirement of <mark>Corporate Sustainability Management</mark>. Here we have tried to show about the sustainable development goal 12. We have analyzed and tried to relate this SDG with other SDGs and we found some conflicts with them, we also have given some possible solutions. While we researched on SDG 12 and its practices we found a company named Danone S.A. who are working on SDG 12. We found a huge information from this company's current practices like, their mission, vision, working tools and management system. Besides all these information we tried to find out some criticism and possible solutions of those criticisms. From all the study we have understand that SDG is a huge decision from United Nation. Though it is very hard to make it possible, it is not impossible. To make these goals successful the organizations, consumers, society and government all should work together.

Sustainable Development Goal

Sustainable development works with economical, societal and environmental issues that improve the quality of life. And Sustainable Development Goals are known as the Global Goals, were adopted by the United Nations in 2015 as a universal call to action to end poverty, protect the planet, and ensure that by 2030 all people enjoy peace and prosperity.

SDG-12

Sustainable consumption and production helps to identify and develop solutions to improve the use of natural resources to achieve multiple sustainability goals at the same time it deals with societal, environmental and economic issues jointly.
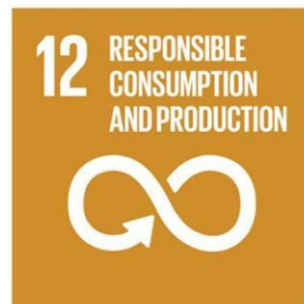
Integration point

SDG 12 is all about responsible consumption and production and it has a great integration into business. SDG 12 integrate below areas:

• Product development: Product development is an area, where company can do more during the life cycle of production. SDG 12 influence company to produce sustainable product from the beginning to the end of life.
• Supply chain management: Supply chain management is another important area where SDG 12 can integrate. One of the goals of SDG 12 is to reduce GHG emission from a product supply chain. SDG 12 can decide how to make a green supply chain management system by its features.
• End of life responsibility: A product can be harmful after its end of life. When people throw a product after using it, it really harms the environment. SDG 12 ensure the sustainable life cycle of a product by installing reusing, recycling, method.
•Office Practices: SDG 12 also integrate into the office environment by motivating the employee about sustainability. And also, by ensuring a sustainable working environment.

Impacts of SDG 12 on product development.

- Long term value: Products value will be long term, it can be re-useable and our next generation will also be benefited.
- Builds credibility: after using the quality product or service customer became credibility. And the credibility will increases.
- Improve relationships: By providing sustainable product and service company can establish good relationship with customer.
- Enhances brand awareness: Brand awareness is the final stage of product development. Where the consumers will prefer the product first comparing with others. And it is possible only by integrating sdg12 with the product development process.

Source: Detox: Welche Firmen entgiften?

Link: https://www.sciencedirect.com/science/article/pii/S0148296322002818

Impacts of SDG 12 on Supply Chain Management.

➢ Planning: In research and development SDG 12 integrate how to plan for an alternative sustainable product. For example, Jute bags are cost effective and cheaper than plastic bags. Strong and carry more weight as compared to plastic bags. Jute has moderate moisture regain, low thermal conductivity, and good antistatic and insulating qualities.

• Sourcing: SDG 12 helps to identify the sources of raw material that is environment friendly.

➢ Inventory management: Inventory management is another area where the supply chain impacts. SDG 12 Contribute to inventory management that helps to fulfil the demand in a sustainable way.

➢ Logistic: SDG 12 define how can be a product sustainable in the consuming level and shipping level.

Starting points for corporate integration:

Research and development: Identify alternative materials for all identified harmful chemicals in products. The Greenpeace Detox My Fashion Campaign calls on clothing manufacturers to cease polluting rivers with dangerous chemicals. Global businesses, retailers, and suppliers have agreed to stop using harmful chemicals, and Greenpeace has even helped change legislation in Europe and Asia.

First Integration of SDG- 12 into Business

Research and development:

SDG 12 first integrate on Research and development in a business. Because when its about sustainability, first concern is to make a product that is sustainable. To do this, authority needs to research first about a product that is sustainable. How to collect the raw material and make a sustainable production system. Apart from this, to make a alternative environment friendly products, there is probably no alternative way except research and development first.

**Source: Supply chain collaboration and sustainable development goals (SDGs). Teamwork makes achieving SDGs dream work, Science Direct, March 2022.

Link: https://greenbusinessbureau.com/topics/sdg/sdg-12-responsible-consumption-and-production/

Conflict with other SDGs

SDG 12 relates to almost every SDGs. There can be no sustainable development without sustainable production & consumption first. To reach the goal SDG 12, businesses must face some challenges that are related to other SDGs. The major challenges associated with food, energy, and waste.
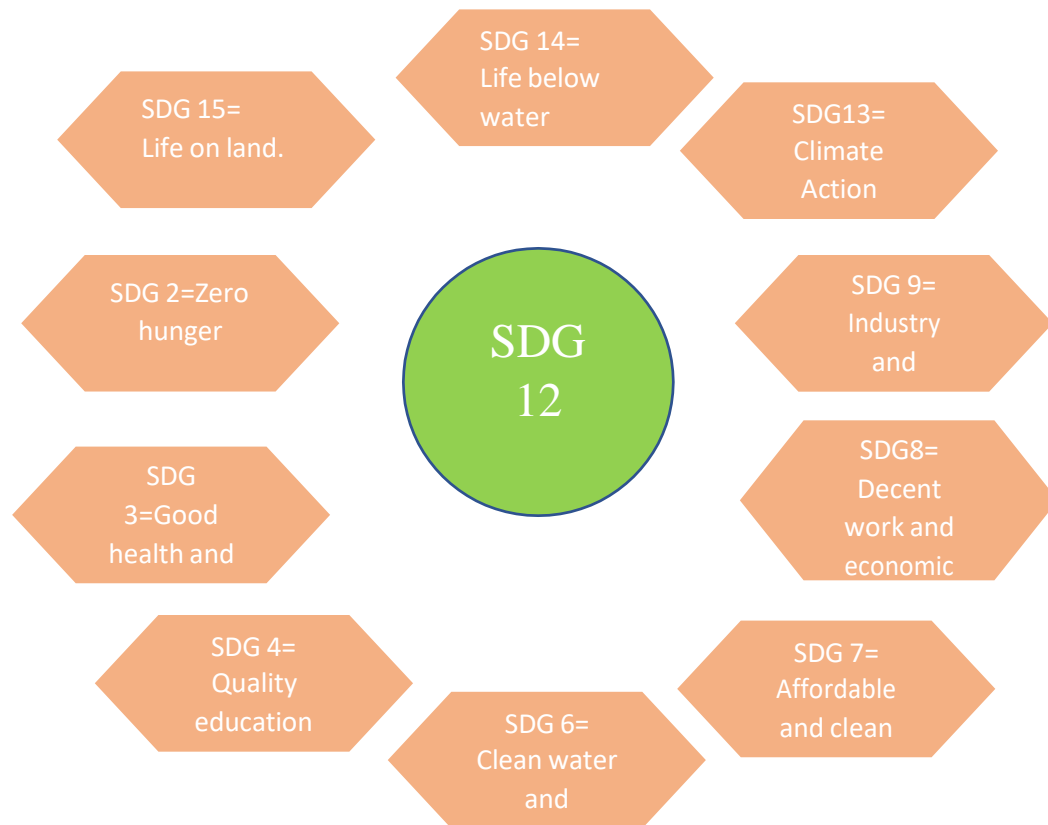
Targets of SDG 12:

In 2015 UN has created 17 sustainable development goal. Among them, SDG 12 (Responsible Consumption and Production) is one of the most important goals set by UN. SDG 12 comprises 11 targets that must be met by 2030 at the latest. The aims of SDG 12 are reducing food waste, ensuring energy efficiency, and making a sustainable production and consumption system. In addition, it has some other major targets that will ensure and fulfill the goal of UN. In order to encourage sustainable consumption and production patterns, 79 nations and the European Union have reported on at least one national policy instrument. Targets of SDG 12 are given below:

- Implement the 10-year sustainable consumption and production framework.
- Sustainable management and use of natural resources.
- Have global per capita food waste.
- Responsible management of chemicals and waste.
- Sustainable reduce waste generation.
- Encourage companies to adopt sustainable practices and sustainability reporting.

- Promote sustainable public procurement practices.
- Promote universal understanding of sustainable lifestyles.
- Support developing countries' scientific and technological capacity for sustainable consumption and production.
- A develop and implement tools to monitor sustainable tourism.
- Remove market distortions that encourage wasteful consumption.

SDG 12 relates to other SDGs: (Before showing the conflicts)

**Source: Official Website of United Nation

Link: https://sdgs.un.org/goals

SDG 12 and its negative impact on other SDGs:

SDG 12 is responsible production and consumption, and to reach its goals and targets, it influences almost all SDGs. Some targets of SDG 12 are conflicting with other SDGs. Because to ensure sustainable production and zero hunger it consumes huge amount of fresh water supply. Consequently, creates a conflict with SDG 6 (Clean water and sanitation). Moreover, production and consumption create greenhouse gas. As a result, conflict with SDG 13 has seen. Apart from these, because of biological diversity losses and dependency of fossil fuel, it creates conflict with SDG 15 and SDG 7. Specific conflicts among SDG 12 and other SDGs is going to discuss below.

Conflict between SDG 12 and SDG 13:

SDG 12(responsible consumption and production) has a great contribution to create greenhouse gas. As production value chain is a significant contributor to global greenhouse gas (GHG) emissions, a direct cause of climate change, it makes conflict with SDG 13(Climate Action).

How product value chain contributes to increase GHG:

Product value chain

Material extraction: For production raw material and natural resources is required. Collecting the raw material and the extraction process of biomass, fossil fuels, metals, and non-metallic minerals contributes mostly to greenhouse gas emission.

Manufacturing: Manufacturing is greatly responsible for greenhouse gas emission. In manufacturing process toxic materials and gases, like carbon dioxide and methane, are burned and pumped out into the atmosphere.

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Consumption: In this stage there is a high possibility to increase carbon in the environment because after consuming a product people throw the unusable part and make the environment polluted. That creates the global warming.

Material processing: Materials processing involves a complex series of chemical, thermal and physical process. As it uses chemical and other staffs, it causes CO2 emission by this process.

Retail: In retailing process, particularly in time of transport of a product in the grocery shop, it emits carbon in the atmosphere.

Disposal and recycling: For recycling and disposal the product, fossil fuel is burned. Also, sometimes to make final product from recycle, different chemical and materials need to be used. All these steps indirectly contribute to increase greenhouse gas.

Possible Solution:

Eco designing engineering: In production site environment friendly infrastructure should be made to reduce carbon emission from production site.

Material substitution: Material substitution could be a possible solution for reducing the waste or toxic waste from the existing product or new product. This process helps to reduce toxic and makes a less carbon emission production system.

Remanufacturing plans: A product should be manufactured in a way that, at the end of its life, it will be possible to remanufacture or reuse. This can highly reduce carbon emission because much energy will not use as like a new production.

Additive manufacturing: Additive manufacturing is a convenient process of manufacturing that reduce carbon emission. It requires less material. Only the essential material is used in this process. In addition, less waste and toxic is produced by this way.

Reduce yield losses: By reducing yield losses, it is possible to reduce carbon emission. Much place of production ensures a sustainable production system.

Conflict between SDG 12 and SDG 6:

As production consume largest amount of water supply, it conflicts with SDG 6(Clean Water and Sanitation). In production process, huge amount t of clean water is used to make a final product. As a result, conflict with SDG 6 can be seen. How SDG 12 conflict with SDG 6 is discussed below.

The way production consumes water and reason of conflicts:
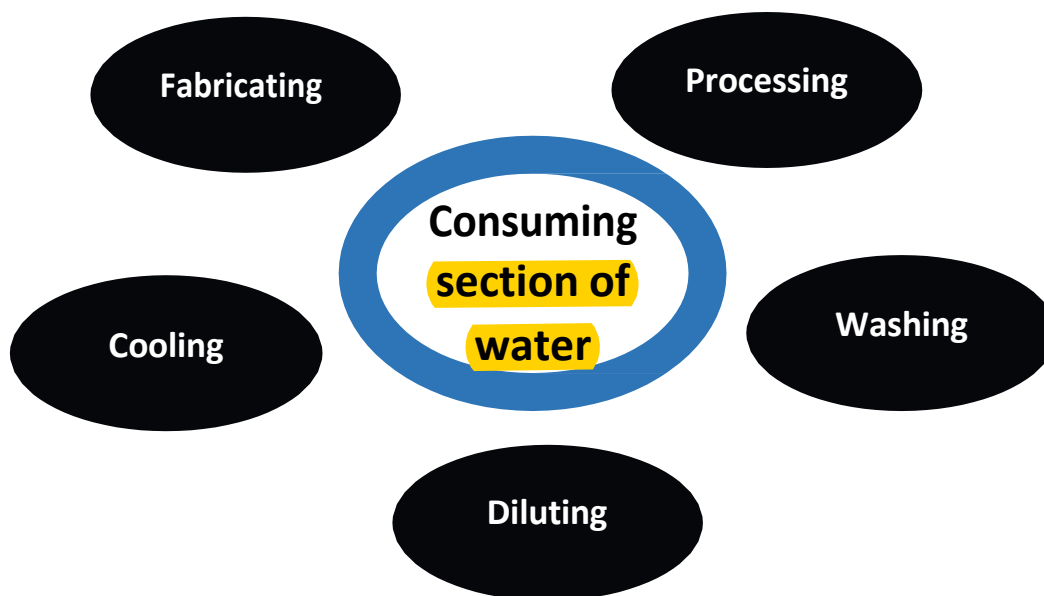
Processing: Processing section of production requires lots of water to remove the toxic and other unhealthy staff from the raw material to make final product.

Washing: most of the products particularly, for food production, washing properly is quite important and leads the waste of water.

Diluting: In food production diluting is used for making a product eatable. In this process fresh water is used. It can be a reason of freshwater scarcity and thus conflict with SDG 6.

Cooling: In some industries, to remove the dust or to make the working environment convenient to the worker, water spray is used. As a result, cost lots of water.

Fabricating: In fabricating process, water is mostly waste because of washing and make the fabricate useable. To this process industries and manufacturers waste huge water and hampering the fresh water supply to human being. Therefore, it is a reason to conflict with SDG- 6.

Possible solutions:

Understand water risk:

Authority should understand the risk of water. That means in which way water or fresh water source will fall in risk and will make a scarcity of water.

Evaluating water use and inefficiencies

It's high time to evaluate the use of water otherwise it may cause a major problem for us to live. First, we have to look around to see which areas consume the biggest amount of water, then we have to take some steps on how we can make it less and reuse it.

Best practices

If we want to reduce the scarcity of water, then we must make some best practices that helps to consume less water in the factory and other sectors as like-
The facility can educate employees with best practices training.

Technologies and equipment

We used water to clean in place, clean out of place, clean floors, and exterior equipment, as well as lubricate and clean conveyors. But we can replace water with equipment to clean these things.

Benefits

If we start to understand the scarcity of water and do some practices of using less water, then it also gives back some benefits which will be beneficial for us and for the future generation.

**Sources: A Systematic Study of Sustainable Development Goal (SDG) Interactions.
Link:
https://agupubs.onlinelibrary.wiley.com/doi/full/10.1002/2017EF000632?fbclid=IwAR1R9kdW2GPgHyf jBal2BRzGjdF6XAeP35r5kT6QIu02G2c4mKMqGnkTgUs

Materiality assessment

Materiality assessment is a method that a company can use to identify or assess potential environmental, governmental and social performance which could have a key impact on them also on their stakeholders. With the benefit of materiality assessment, a company can analyse their business risks, also their business opportunities and in this way, they can enhance their business approaches.

About the company Danone S.A

At the end of World War I, the Spanish people suffered from intestinal illness, mainly due to malnutrition. Later, Isaac Carasso began producing their new product: Yogurt. Elie Metchnikoff, a researcher at Pasteur Institute in France, added lactic ferments to the yogurt, which have been shown to have health advantages. Then, Isaac Carasso, named after his son's nickname "Danone" began selling "Danone" yogurt to pharmacies in 1919. Isaac and his son Daniel Carasso spent their entire lives perfecting their product and mastering it as well with the help of the Pasteur Institute.

They have basically **three sectors** where they are doing their businesses and those three sectors are- Essential dairy and plant-based products, early life nutrition and medical nutrition and Waters. In every sector of their business, they ensure the maximum sustainable production and consumption.

Their **main purpose** is to build on a unique health-focused portfolio that enables them to become significant players in the food revolution and this strategy helps them to achieve long-term goals which pass directly from their 'One Planet, One Health' perception.

Discussing **the 1ˢᵗ step** of the materiality assessment of Danone. The purpose of Danone is to bring One Planet and One Health. These statements represent their belief that human and environmental health are inextricably linked. Also, it is a call for action for all the food consumers and stakeholders to get involved in the food revolution which will ensure more sustainable eating and drinking habits.

The 2nd step of materiality assessment is the target. Danone set their 6 targets for materiality assessment to confirm the sustainable production and consumption. They are as follows-

- Achieving sustainable management and efficient use of natural resources. For instance, help the ecosystem to be more strengthened.

- Reduce food losses along manufacturing and supply chains by half per capita and worldwide food waste at the retail and consumer level, which includes post-harvest losses.

- Significantly reduce waste generation by preventing, reducing, recycling and reusing.

- Encouraging businesses, particularly large and multinational businesses, to adopt sustainable practices and incorporate sustainability data into their reporting cycles.

- Promote sustainable public procurement practices in line with national strategies and priorities.

- Assuring that people all around the world have access to necessary knowledge and awareness in order to promote sustainable development and environmentally friendly lifestyles.

Categorization is the **3ʳᵈ step** of the materiality assessment of Danone S.A. Here, they categorise the six targets step by step which means the targets come by in order basis or in priority basis.

After categorization, **the next step** is impact and importance for their three business sectors for example, impact and importance of essential dairy and plant-based products, impact and importance of early life nutrition and medical nutrition and the waters.

I) Impact and importance of essential dairy and plant-based products-

Danone's strategic plan drive them towards plant-based foods and beverages. Providing basic dairy products with nutritional advantages ensured to maintain its local and worldwide brands.

To add, Danone S.A appointed 530 researchers who research in 40 countries to ensure the sustainable production and consumption. With the production of zero waste the company get benefited economically.

II) Impact and importance of early life nutrition and medical nutrition-

Danone´s programs and services ensure people´s specific nutritional needs and the company strives with those things throughout their lives also in ways that have a positive impact on community health.

The company focuses on specialized nutrition for-

1-Healthy growth and development in early life

Some women, who are unable to breastfeed their children and in these circumstances Danone introduced baby formula products on the basis of years of scientific research and development which are safe and healthful alternatives for those children.

2-Nutrition in times of illness

People who have had a stroke or battling illnesses like cancer, may find it challenging to achieve their nutritional needs with a regular diet alone. In these situations, medical nutrition can help them to achieve better clinical results by providing food and drink to gain their unique nutritional needs.

III) Impact and importance of Waters

1-Quality beverages that are good for health-

Water is the healthiest drink in the world to hydrate with. Danone wants to make it easy for people to choose it, as well as to encourage people to drink more and drink better.

2-Made in ways that are good for the planet

Water management programs such as the use of RPET and carbon-neutral outcomes are very important milestones in Danone´s sustainability journey as well as to secure sustainable production and consumption.

**Source: Website of Danone S.A.

Link: www.danone.com

Effects of their products and services into Environment, Society and Economy

❖ Effects on the Environment

Reduction

As we know that Danone has become a world leader in four businesses Essential Dairy and Plant-Based Products, Early Life Nutrition, Medical Nutrition and Waters. Building on a unique health-focused portfolio that allows them to be a key player in the food revolution. Except food their business a huge influence on environment, society and economy. If we focus on the statistics of Carbone footprint we will understand their effect.

		2017	2018	TARGET
CLIMATE CHANGE ☁				
Reduction in CO_2 emissions intensity on Danone's full scope (g of CO_2 eq/Kg products sold)[1]	SCIENCE BASED TARGETS	10.5%	15.6%	50% by 2030
Absolute reduction on Danone's scope 1 and 2 CO_2 emissions[1]	SCIENCE BASED TARGETS	9.7%	20.3%	30% by 2030
Renewable electricity		18%	34%	100% by 2030

Figure: Current Progress and next step of Danone to reduce Carbone emission.

From this figure we can see, from their three projects in 2017 to 2018 the CO2 emission was reduced by 3.1%, 10.6% and 16% from the previous year. They have a long term plan to decrease this percentage to 50%, 30 % and 100% in Renewable energy by 2030.

** Source: Climate policy, Target zero net carbon.

Link: https://www.danone.com/content/dam/danone-corp/danone-com/about-us-impact/policies-and-commitments/en/2016/2016_05_18_ClimatePolicyFullVersion.pdf

Sequestration

1. Keeping Carbon in the Ground

Danone always tries to find out the solution how they can reduce carbon production and for this reason they identifies the ways to help regenerate soils and increase soil carbon sequestration. In 2018, Danone North America launched a soil health initiative in partnership with experts from The Ohio State University and Cornell University, which will identify ways to help regenerate soils and increase soil carbon sequestration. Danone North America will commit up to $6 million to research over the next five years as part of this initiative. Their main aim is to keep the carbon inside the soil which will help to reduce carbon emission.
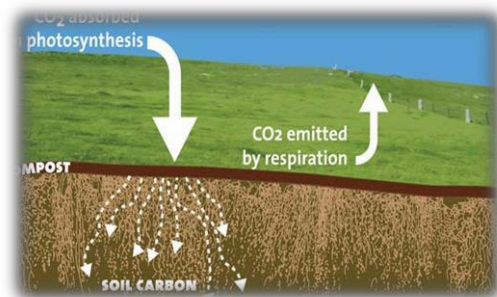
**Source: Website of Danone S.A.

Link: www.danone.com

2. Eliminating Deforestation

About 15% carbon emission is caused for deforestation. To meet their zero deforestation commitment, they have set standards for key commodities such as palm oil, soy, timber, sugar, paper and board.

    A. Led a traceability exercise for using of Soy.

    B. Practices using recycled paper

    C. Uses 100% physically segregated palm oil certified by RPSO.

3. Offsetting

Along with nine other corporate partners, they invest in the Livelihoods Carbon Funds to support projects for agroforestry, mangrove restoration, and fuel-efficient cooking tools for communities in Asia, South America, and Africa. Projects are monitored over up to 20 years, requiring a long-term commitment from the investor companies in the Livelihoods Carbon Fund.

❖ **Effects on the Society**

Danone creates social value by supporting its more than **100,000 employees** in **more than 57 countries** through its human resources strategy, which is built around the following pillars:

- **Health and Safety**
- **Inclusive Diversity**
- **Employee Training and Development**
- **Social Dialogue**

❖ **Effects on the Economy**

Danone always uses 100% circular, keeping materials in use and out of nature.

1. **RECYCLED, REUSED, OR COMPOSTED IN PRACTICE**

The company will help to meet the collection targets set by EU regulators by 2025, target of 90% collection for beverage bottles.

2. **PACKAGING DESIGNED FOR CIRCULARITY**

Their goal for 2025 is for every piece of packaging—from bottle caps to yogurt cups—to be reusable, recyclable, or compostable.

3. **PRESERVATION OF NATURAL RESOURCES**

By 2025, they will reach 25% of recycled material on average in our plastic packaging; 50% on average for our water and beverage bottles; and 100% for evian bottles. We will also aim to offer consumers bottles made from 100% bio-plastic.

**Source: Website of Danone S.A.

Link: www.danone.com

Engagement

Danone has three different top leading industry and they all have a huge engagement with the the environment, society and the economy. Form their previous year's statistics of sales, their produces line, research and development process and their market area we can assume about their engagements. So we have used a little statistical information about Danon's industries.

Essential Dairy and Plant-Based Products
- Globally no. 1 fresh dairy products and plan based products
- Top 3 countries are USA, Russia, France
- Total sales 13.2 billion euro

Water
- Worldwide no. 2
- Sales 4.2 billion euro
- Top 3 brands AQUA, MIZONE, Evian

Specialized Nutrition
- No. 1 leadership position in Europe in medical nutrition, worldwide no. 2 in early life nutrition.
- Top 3 countries China, UK, France
- Sales 7.16 Billion in 2018

**Source: Website of Danone S.A.

Link: www.danone.com

❖ Negative effects of Danone's operation.

✓ Production of water and other products can create the scarcity of pure water.
✓ Reduction of deforestation reduces plant based product production.
✓ Keeping carbon in the ground will reduce the productivity of soil.
✓ Costly production process will increase the price of the products.
✓ All classes of people cannot buy their products equally.
✓ Limited variation of products and industry.

❖ Recommendation

- Danone should use only the surface water and reuse them as much as possible to solve pure water scarcity.

- They should follow an advance replantation strategy to increase wood made products production.

- Creating and donating to the carbon recycling plant they can save the soil.

- Danone should reduce production cost by decentralizing their production area and using modern technology.

- They should influence the other industries to follow the sustainable production and consumption goal to create all the products and services availability.

❖ Conclusion

SDG 12 is the most important and crucial goal among all SDGs. It has a great influence on business and it helps to run a business sustainably. It helps to make sustainable balance on production and consumption. Company, like Danone is working on SDG 12 and try to reach the Goal of SDG 12. By assessing the materiality assessment it is almost clear that Danone is working on the right way and by implementing the suggesting Recommendation it will be able to make itself more efficient in terms of SDG 12.

"This report is prepared by the equal contribution of all group members."

Other references:

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Ostbayerische Technische Hochschule
Amberg-Weiden
WEIDEN BUSINESS SCHOOL

Corporate Sustainability Management

Anchoring SDGs within the business
Goal #9 Industry, Innovation and Infrastructure

Corporate Sustainability Management

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TABLE OF CONTENTS

1. Introduction

In 2015, 193 nations from different parts of the world took the Agenda for Sustainable Development Goals 2030. It incorporates 17 Sustainable Development Goals (SDGs) and has 169 SDG Targets. It also has 232 unique Indicators. Expanding on the standard of "abandoning nobody," it stresses an all-encompassing way to deal with accomplishing the economic turn of events. The whole process of creating and establishing SDG goals was to innovate the world so that businesses can survive in the long run and create an effect for future generations in a sustainable way. In the year of 2020 environmental, social and governance (ESG) scoring and reporting document from the Organization for Economic Co-operation and Development (OECD) sees that the investment in the sector of Sustainability has grown to a higher level in the first phase due to the higher number of funds and green investors added ESG approaches to their overall agenda. Big corporations, central/local banks, and the public sectors emphasize a greener and low-carbon economic environment.

Technically, 2020 was a decade of action, but we saw slower progress because of the newer concept and slow convincing policies. However, things changed when the 17 SDG targets were met. The OECD's quantitative analysis indicates the progress made and challenges still ahead regarding sustainable development. The wide variety of metrics, methodologies, and approaches indicates many disparate outcomes.

Later, it became more evident that people and industries are really concerned about the matter of Sustainability. In SDG 9, as it directly talks about innovation, industry, and infrastructure, shows future generations' ways. Foster quality, dependable, reasonable and robust framework, including local and transborder foundation, to help financial turn of events and human prosperity, focusing on reasonable and fair access for all. It is not generally clear how to relate the Goals to business, yet the SDGs cannot be accomplished without the private area's assets, abilities, advancement, and economies of scale. Corporate responsibilities should be reality and proof-based to keep away from SDG-washing. Begin with the Goals near the central business to impact step-change and change.

Notwithstanding, meaningful corporate activities are at their best when they prevail regarding conveying co-advantages or positive effects across different objectives.

2. Sustainable Development

Sustainable development is making the world a better place for all living beings without destroying actual resources and possibilities for our coming generations.

When we think of sustainable development, we should always keep in mind of

- Social Development: It refers to the well-being of the people and the eradication of Poverty through the development of the economic area.

- Economic development: It refers to the access to basic needs such as health, education; human security and rights; gender equity; and distribution of security and rights, gender equity, and distribution of benefits and access to resources across the social benefits and access to resources across the society.

- Environmental Conservation: It is concerned with the conservation of natural resources and minimizing impacts on physical and biological resources.

3. Sustainable Development Goals

The United Nations adopted the Sustainable Development Goals (SDGs), also known as the Global Goals, in 2015 as a global call to action to end poverty, protect the environment, and confirm that by 2030, everyone will live in peace and prosperity. The Sustainable Development Goals (SDG): a set of globally applicable goals that balances the three dimensions of sustainable development: social, environmental and economic.

3.1 SDG 9: Industry, Innovation, and Infrastructure

Two necessary drivers of financial growth and equal access to records are infrastructure and innovation. Especially with greater than 1/2 of the world's population living nowadays in cities and the reality that 4 billion human beings nevertheless do not have to get entry to the Internet. By constructing resilient Infrastructure and by using promoting sustainable industrialization to foster innovation for a higher future.

3.2 Why SDG 9 is so Essential

The growth of economics, society, and climate action is heavily dependable on investments in infrastructure, innovation and technological development.

In the world of a rapidly growing global economic era and enhancing inequalities, sustained growth must include industrialization. So that, it ensures the opportunities accessible to all people by supporting innovation and resilient infrastructure. People usually value the industry which has a successful future and a sustainable output to mankind. For all the material of business and their supply chain process, it's important to have a good connection to the web for a better future. During the global recession of all the time, we have considered so a way that, how interconnected businesses are and how the whole thing happened. After improving or rising from every recession, we have seen that, it's important to have great innovation in infrastructure and create a better vision just to cope with future development.

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                    No
                 economic
                  growth


   Unemploy      Importane      Increase
    -ment        of SDG 9       the crime
                                  rate


                  Shortage
                     of
                 electricity
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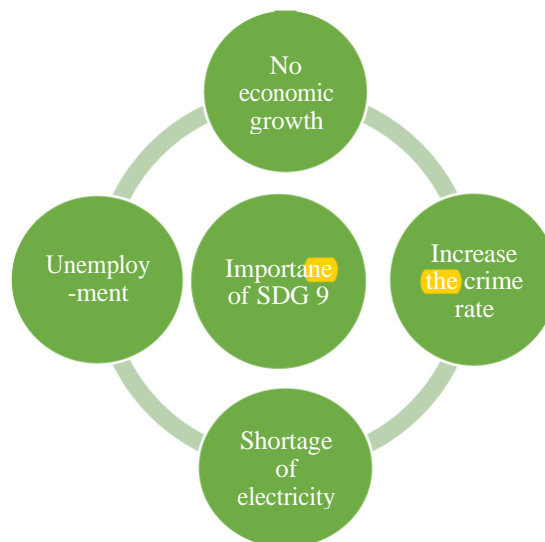
1. Without following SDG 9, it's obvious to UN that no economic growth will happen in the near future.
2. No job opportunities will be there and people will go under the poverty line.
3. Earning money will be complex and people will suffer from hunger and more criminal activities will increase.
4. There will be no electricity, roads, internet, or clean water and it will affect to ensure on other SDG's as well.

3.3 SDG 9 Targets

The has distinguished eight targets and 12 pointers for advance in SDG 9. Numerous of these objectives are scaled for national government execution. Be that as it may, they are still a trade practice on a little scale to appear as an illustrated commitment to contributing to foundation improvement and advancement.

There are some appropriate targets and markers for businesses:

- Develop economical, versatile, and comprehensive infrastructures
- Promote comprehensive and feasible industrialization
- Upgrade all businesses and frameworks for sustainability
- Expand inquire about and update mechanical technologies
- Support household innovation which is improvement and mechanical diversification

3.4 Why should Businesses adopt SDG 9!

Companies can only exist in a universe with a successful industry and infrastructure and can only grow through innovation. Companies rely on materials, resources, and labor from around the world in all aspects of their business operations. While there is an image of unlimited success in the business world, it is entirely dependent on a strong infrastructure around the world. The COVID-19 pandemic has shown how connected people are and how sensitive the industry really is. In a world rebuilding after a devastating pandemic, businesses must support growth on SDG 9 to secure the infrastructure that supports technology, communications, transportation, and sanitation to promote justice, progress, and financial growth.

3.5 Best methods to foster Industry, Innovation, and Infrastructure

Below are the simplest practices for businesses to drive progress in SDG 9:

- Invest in resilient infrastructure at operations in developing countries or rebuild existing infrastructure to form it more sustainable.
- Ensure all infrastructure is resilient and may withstand natural disasters.
- Incorporate clean and sustainable renewable energy into your company's power portfolio.
- Ensure you provide fair, equitable pay to market economic process.
- Enhancing geographic reach might be another way to expand research and development.
- Provide all stakeholders the chance to advocate for their needs and offer creative solutions.

• Consult stakeholders along all process steps to make sure that development and innovation benefit all.

• Establish specific and rigorous standards to make sure that company projects are administered, managed properly, and don't contribute to inequities.

• Collaborate with other companies, nonprofit organizations, NGOs, and therefore the government to market sustainable growth and prioritize key actions.

3.6 How SDG 9 Effects on Business

There are currently two main issues that humanity must deal with. The Sustainable Development Goals (SDGs) are one, and implementing the inventions and improvements that characterised the Industrial Revolution 4 is the other (IR4.0).Both are obligatory innovative thinking and a ground-breaking change of attitude. The first presents an existential dilemma, whereas the second is more highly technical in nature.

Researchers and professional groups are already discussing the benefits and potential drawbacks of IR4.0. Discussions of disadvantages concentrate on issues like rising environmental pollution, growing inequality between rich and poor nations, etc., as well as potential harm to sustainability. The benefits focus on a better work environment, providing tools to achieve the SDGs, making everyday life easier, supporting reliable global value chains, etc. How countries embrace and adapt to the technological changes ahead will determine whether they are successful in meeting the promises of the 2030 Agenda for sustainable development and achieving the SDGs.

The easiest thanks to understand the Fourth technological revolution is to specialise in the technologies that drive it. These include AI (AI), emerging computing technologies and large data, robotics, 3D printing, Internet of Things (IoT), virtual and augmented reality, blockchain technology, etc. These technologies have an so far unknown potential impact. sustainability and environment.

4. Corporate Integration

At the current time, it's important for every corporate business should integrate themselves with SDGs and specifically SDG 9. As it became a major issue to resolve all the problems for future generations and create a sustainable future for upcoming generations. These can be done in various ways given below:

1. SDG 9 is important for the growth of the economy and decrease of poverty in a country.

2. SDG 9 increases more jobs and opportunities for coming generations.

3. Invest in new, resilient infrastructure in developing countries or retrofit existing infrastructure to make it more sustainable.

4. Expand the eco-geographic land of research and development facilities, bringing R&D capabilities to developing and non-developing countries.

5. Promote innovation by giving all stakeholders the opportunity to offer creative solutions to sustainability challenges. More scope out the good ideas and offer awards to the best.

5. Challenges in achieving Sustainable Development

It's not always easy to achieve Sustainable development by maintaining all the procedures and indicators. The tendency to complement each other in ways that present some challenges. Rapid urbanization in developing countries, financialization, and globalization are recipes for inequality and expose nations to high food and nutrition risks, environmental degradation, and energy security due to high demand for land and water.

- Shortage of economic resources to carry out a sustainable development plan
- Natural calamities and occurrences can bear a threat to sustainability
- Lack of efforts at a local level
- Over-usage of natural resources
- Climate change
- Loss of biodiversity
- Poverty
- Over-population

There are some major challenges that also need to be addressed. They are given below.
- Strategies to overcome these challenges
- Reduction of wastage of resources
- Investing in alternative sources of energy
- Use of the best available knowledge

- Being a responsible citizen

6. How to act on SDG Goal 9 is interconnected with different Goals SDGs

The Global Goals are inherently interconnected. Action taken toward one Goal can aid or avoid the fulfillment of others. Identifying and addressing these interconnections will help corporations to construct holistic and systemic options that make bigger progress and limit negative impacts. To help construct a larger understanding, we have illustrated some of the methods by which the Goals connect. These are not exhaustive, and we encourage businesses to consider how they follow in their own operations.

> **Enhance possibility of positive impact on:**
> Sustainable infrastructure is core to the improvement of sustainable cities (Goal 11), and these objectives can be pursued in the same way. Developing greater sustainable industrial methods and products through R & D investments will in addition enhance efforts to improve sustainability in the manufacturing of items and services (Goal 12). Sustainable infrastructure can aid more productive agricultural practices (Goal 2), increased access to wash (Goal 6), and smooth strength (Goal 7). Resilient infrastructure in vulnerable communities also will increase the adaptive ability to climate change (Goal 13).

> **Reduce the risk of negative impact on:**
> Infrastructure investment and industrial improvement involve large financial flows, which can contain risks of illegal business conduct, which include corruption and bribery, in all markets. Relatedly, there is a threat of extended inequalities if the financial benefits drift solely to a small group, particularly in instances the place there may be corresponding negative effects on the livelihoods of other communities (Goal 10). This in turn could lead to injustice and erosion of establishments (Goal 16). Displacement of communities for giant infrastructure tasks tends to disproportionately affect ladies and youth (Goal 5) and vulnerable communities. If projects do now not attach to strict environmental overall performance requirements, they may additionally motive serious damage to lifestyles on land (Goal 15), existence below the water (Goal 14), and the climate (Goal 13).

7. Materially Assessment approach for SDG 9

What is Materiality?

Materiality is a theory that is very crucial for the organization. The material assessment is a system of internal and external stakeholders of that company. It is the influencer for organizational economic, financial, and legal aspects; materiality defines how much and why these are very important for the organization.

Materiality can define in many ways depending on its use such as regulators, standards-setting bodies, and investors.

There are several definitions of materiality from a regulatory perspective but according to the United States Securities and Exchange Commission (SEC):

"A matter is "material" if there is a substantial likelihood that a reasonable person would consider it important."

The Corporate Reporting Dialogue (CRD) defines materiality:

"Material information is that which is reasonably capable of making a difference to the proper evaluation of the issue at hand."

International Financial Reporting Standards (IFRS) Foundation defines materiality as the following:

"Information is material if omitting, misstating or obscuring it could reasonably be expected to influence the decisions that the primary users of general-purpose financial statements make based on those financial statements, which provide financial information about a specific reporting entity."

What is Materiallity Assessment?

Material assessment is a process of analysis by which a company can identify the issue that occurs on environmental, social, governance, and broader like innovation, industry digitalization, and geopolitical situation those very crucial in operation purpose.

Material assessment is the primary step to establish a business. It gives details to report for future business trends, risks, and opportunities that help to create value. The assessment can

help an organization to prepare sustainability or integrated reports. It is recognized as best practice that a company can prepare reports on their relevant issues that impacts the ability to create or maintain to erode economic, environmental, and social value for the company, stakeholders, the environment, and society.

A proper Material assessment can build a company's resilient infrastructure, promote inclusive and sustainable industrialization, and foster innovation. It is crucial to distinguish materiality; this refers to financial reports. Also, cited to sustainability reporting.

Why materiality assessment is important in SDG 9?

Nowadays materiality assessment is very important for sustainable development goals for an organization, and it has assessment organization's different view.

Make action strategy for SDG 9 for business purposes:

Proper material assessment can give guidelines to the organization's SDG. It's helping to focus on creating an integrated business case for endeavors, which may be expensive earlier and not have enough way to prove the result.

For example, Sintiva was founded in 2012, which is specialized in additive manufacturing of advanced propulsion systems for the aerospace, defense, and space industries. The materiality assessment helped them to find out the unique manufacturing process in the AM industry. This organization manufactures precision metal components faster and more economically than traditional casting and forging which is more environmentally friendly and represents industrial ecology. Sintiva has achieved GBB certification for its unique process of innovation. They are applying the in-built benefits of metal additive manufacturing, Sintavia is taking a leadership role by improving the industrial ecology of precision metal manufacturing,

Help to enhance communication strategies:

This assessment will help the organization with communication strategies. During assessment need to identify actual projects which are most important to each stakeholder groups. SDG 9 focused on the resilient infrastructure of policymakers and related to all stakeholders prioritize communication, as it will increase productivity, improve efficiency, benefits of investments, and trade growth. SDG 9 focused on resilient infrastructure.Proper communication of interests and priorities will increase the interest of stakeholders in engagement.

Advance assesses of the long-term risk

Materiality assessment is crucial for long-term risk find out which is undeniably important. An example of this is the adoption of resilience-based practices to combat the future effects of climate change or the probable of a regulatory change that will affect your organization's infrastructure.

The importance of the potential impact of the business is long-term risks and materiality assessment aware of the exact issue. It is a proactive approach.

Identify SDG trends

The materiality assessment will provide insight into SDG trends with the growth of the SDG industry in recent years and investment increase. The demographic workforce of global manufacturing employment.

Materiality assessment Process:

Material assessment is the main approach for SDG. This is a formal assessment for any organization but there has no exact way to conduct this assessment. Some organization has their internal team to assess but others take help from an external consultant. The main goal of Material assessment is to establish an advanced sustainable infrastructure to achieve the SDG.

To conduct the assessment of organizations for SDG 9 need to follow the below steps:

Step 1: Identifying the purpose and scope of the assessment

Step 2: Find out the potentiality of the topic

Step 3: Classify the potential topics

Step 4: Collect data from regional and trans-border infrastructure

Step 5: Prioritize the target achieving goal

Step 6: Regulate the fact with respective management and business vision

Step 7: Take response from stakeholder

Step 1: Identifying the purpose and scope of the assessment:

Define what materiality means for your organization and be clear about your objectives and audience

Anticipate	**The Need to define the objectives of materiality assessment:** In this ==stage need== to consider the objects which define the purpose and scope of SDG 9 - Identify key factors of resilient infrastructure - Enhance the strategy to achieve the sustainability goal - Identify facilities for sustainable and resilient infrastructure development - Involve the stakeholders (Internal or external) - Identify future trends that may impact on the organization - Identify areas of the business that maybe improve.
	Identify the audience: -Who will be the key audience for the outcomes of the materiality process?
	Define what materiality means for your organization: - Is the assessment topic beneficial for businesses and stakeholders? - Is that assessment have an impact on regional and trans-border infrastructure, to support economic development and human well-being? -Is the topic of strategic relevance to your business?
	Define the scope of the organization for material topics: - Have to consider the region to assess the materiality - Need to interpret which part need to consider for the assessment (Business unit/Group) - Define the limit of the materiality assessment - Select the result of the materiality process will reporting
Advanced	Need to set up the materiality is the main part of the management, including materiality assessment results when planning the business strategy.

	Atlas Copco follow the GRI guidelines for reporting which is the combination of EU taxonomy – classification of sustainable activities.
	Need to manage impact operational control: All reports must be disclosed as per GRI G4 guidelines where there has significant impact on every material topic occurs.

Step 2: Find out the potentiality of the topic: Identify and list down all potential topic for material assessment.

Anticipate	Need to review all topics those related with potential material related like reporting, internal data, external peer review, sector-specific regulations and standards, ratings, and rankings (Dow Jones Sustainability Index, Carbon Disclosure Project).
	Assign responsibility by compiling the long-list of material topics and consider who outside of the sustainability team should be involved e.g. enterprise risk management team, senior management. Involving business functions beyond the sustainability team will provide wider perspectives and more in-depth understanding of trends affecting the business.
	Include areas of opportunity like cost savings, efficiency gains, new revenue streams from green products.
	Need to think about external stakeholder engagement so that they can give valuable feedback
Advanced	For capturing any changes need to establish a continuous process.
	For storing the evidence and documentation need to invest in a digital solution.

Step 3: Classify the potential topics:

Anticipate	Need to cluster the topics in high level categories. Customize the level of appropriate assessment Like group, country, business unit, site level etc.
	Categorize the topics as existing technology, strategy and policies use in the company.
Advanced	Associate all related topics those are relevant in external trends. Also ensue that company can be able to articulate they are adding value in social and environmental fact.
	Need so consider the facts how material topics can connect and influence risk and opportunities.

Step 4: Collect data from regional and trans-border infrastructure

Anticipate	Accumulate the information about the relevance of each material topic so that information needs to prioritize the topic in the next phase. The steps include- - Consider the assessment topics so that stakeholders can identify the importance of the topic - Need to define the methodology with the score of the topic - Assess the critical topics that include business market opportunities, product innovations, and current/ future risks.
	Assess the actual and potential impact of economic, social, and environmental to understand the effect.
Advanced	Using methodology quantifies the impact on economic, environmental, and social.

Step 5: Prioritize the target achieving goal

Anticipate	**Prioritize material topics by:** - Need to identify the relevant business functions and decide which topic needs to prioritize that is relevant to business function. - Select topics based on the business impact by assessing the economic, social, and environmental impact.
Advanced	Prioritize the risk management function closely with society and the environment.
	Develop a methodology with scoring to weigh that input in various sources.

Step 6: Regulate the fact with respective management and business vision

Anticipate	Confirm the assessment by senior management that will define the level of evaluation. If need review the process and ensure. The outcome will be considered reliable. This is performance measurement evaluation level which is includes an evaluation of appropriateness reasonableness made by managing directors and board of directors.
Advanced	For recommendation present the result of the materiality assessment to the Board of Directors.

Step 7: Take response from stakeholder

Anticipate	Need to identify the stakeholders before you repeat the process to review the material topics published and evaluate the outcome of your materiality assessment.
Advanced	Establish the feedback on material outcome and make sure the assessment process is comprehensive.
	Find out the next integrate results of material assessment in company strategy, governance, operations and reporting.

We would like to provide a real example of a material assessment.

Atlas Copco is a multinational industrial company that manufactures industrial tools and equipment. Atlas Copco's ultimate mission is to achieve sustainable, profitable growth.

The material assessment is an integrated part of Atlas Copco's annual report. It is included complementary information about the materiality analysis, stakeholder dialogue, governance, result, and reporting principles. They included internal stakeholders include functions such as research and development, logistics, human resources, and purchasing; external stakeholders are also, directly, and indirectly, engages with international NGOs, unions, key investors, civil society and business advocacy groups, customers, and business partners.

In 2021 Atlas Copco conducted a new material assessment the main purpose was identify the risks and opportunities those are relating to sustainability. Also, identified some areas for sustainable development with high and low priority.

Impacts of Material Assessment:

Material assessment forces below impact those impact on business to understanding the sustainability impact and risks throughout the value chain helps to choose the right actions and handle them.

Create the Value:

To build long-term value creation Atlas Copco focuses on topics that will help them to be a leader in sustainability. The ambition is to express the target and KPIs.

- Business ethics and integrity

- Occupational health, safety & well-being

- Product quality and service

- Life-cycle approach to product development

- Product carbon impact

Build the Trust:

The main aim is to build trust in the business of Atlas Copco among respective stakeholders. The main thing is to deliver transparency and keep pace with them. They focus on the below topics to build the trust:

- Energy use and efficiency

- Human rights

- Responsible value chain

- Data protection and privacy

- Climate impact along the value chain

Strategic assistant:

This is a crucial part of Atlas Copco for business strategy and a vital role of ensure the resilience business. Here the focus on

- Diversity and inclusion

- Talent development and retention

- Gender balance in leadership positions – Circular business models

Material Assessment of Atlas Copco's 2021:

The main goal is Atlas Copco ´´ Innovating for a better tomorrow`` to ensure the Sustainable goal by developing highly efficient and sustainable product. Atlas Copco contributes to the following Sustainable Development Goal to achieve SDG 9:

9.4 Sustainable industries, with resource-use efficiency and clean and environmentally sound technologies and processes.

Material assessment in 2021:

Through the materiality analysis conducted in 2021, They concluded that the climate, and related topics such as a lifecycle approach to product development and carbon impact, is gaining increased attention from stakeholders. Diversity and inclusion as well as talent develop- ment are also areas where they would like to see us focus our resources and efforts. Based on the materiality analysis we have revised the sustain- ability targets against which we will measure our progress from 2022 onwards. These include science-based targets to reduce our greenhouse gas emissions, throughout the value-chain, in line with the Paris Agreement.
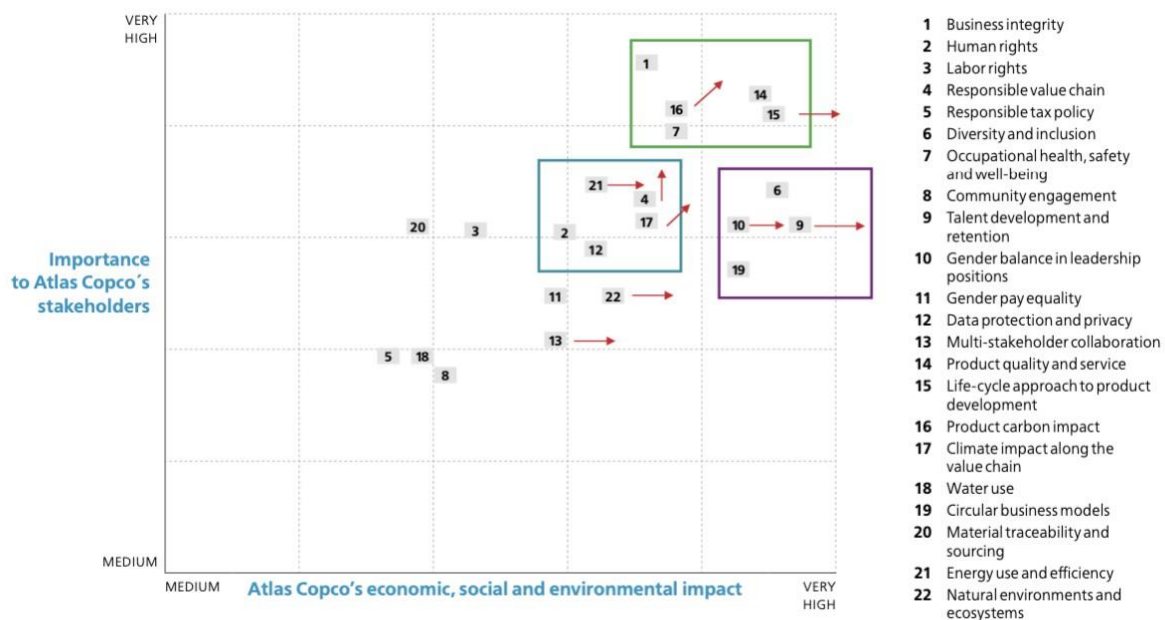
<u>**Atlas Copco follows the below steps to accomplish the assessment:**</u>

Step 1: Identifying the purpose and scope of the assessment:

Atlas Copco identified the key factors products and service, people safety and well-being, ,ethic, and the environment for resilient infrastructure. They identified the stakeholders (internal and External). Their main aim of sustainability report provides to relevant stakeholders economic, environmental, and social impact information. Atlas Copco also focuses use access renewable energy to reach low carbon future.

Atlas Copco follow the GRI guidelines for reporting which is the combination of EU taxonomy – classification of sustainable activities

Step 2: Find out the potentiality of the topic:

In this step Atlas Copco identified the potential topics those are related with lifecycle approach of product development and carbon impact. This organization always invest in R & D to find out the potentiality growth for sustainable.

Step 3: Classify the potential topics:

Atlas Copco classified the potential key topics as per stakeholders:

Stakeholders and the key topics:

Stakeholder Group	Key topics
Customers	-Product Safety -Product Innovation -Carbon Impact
Investors, analyst, and shareholders	-Growth & profitability -Risk management -Business Ethics
Employees	-Heath safety -Working Condition -Compensation and benefits

Society	-Climate and environmental Impact -Labor Market issues -Human Rights
Business Partners	-Labor conditions -Business impacts

Step 4: Collect data from regional and trans-border infrastructure:

Atlas Copco accumulates the relevant information by considering assessment topics. This organization have a group of methodology to design the product. By 2024, Atlas Copco has common methodology for assessing circularity of new redesign products.

Step 5: Prioritize the target achieving goal:

This steps organization work to prioritize the target goal for sustainability. The main goal is to deliver sustainable and profitable growth.

Step 6: Regulate the fact with respective management and business vision

This is performance measurement evaluation level which is includes an evaluation of appropriateness reasonableness made by managing directors and board of directors.

Step 7: Take response from stakeholder:

In this stage identify the stakeholders before repeat the process to review the material topics published and evaluate the outcome of your materiality assessment. Also need to establish the feedback on material outcome and make sure the assessment process is comprehensive.

To find out the next integrate result of material assessment take in-depth interviews with stakeholder groups such as customers, employees, investors, NGOs, peers, and board members. To accomplish this last step also a survey, require. The result of survey is discussed in internal workshops with employees representing functions such as marketing, purchasing, engineering, HR and logistics and the specialist safety, health, environment, and quality function and is reviewed by Group Management.

The analysis is used in the review of the Group's focus areas for sustainability. It also serves as input to the formulation of the sustainability KPIs and targets that measure Atlas Copco's progress.

7.1 Corporate Sustainability

SDG 9 basically contributes to developing sustainable, resilient, and inclusive infrastructures.

- The outbreak of the COVID pandemic and the recent Russia and Ukraine has changed the dynamics of impact-oriented assessment for SDG 9

- As a result of the pandemic, businesses found innovative ways of having meetings through the online medium instead of other mediums of transportation (air travel). This resulted in a decline in air passengers by 60%, a reduction from 4.5 billion in 2019 to 1.8 in 2020. Businesses can commit to having 90% of their meeting online as a commitment to corporate sustainability.

- In the energy sector, companies using coal and oil (fossil fuel) to generate electricity can instead use innovative ways like using renewable energy like solar and sun to generate electricity for production. IKEA and Walmart are examples that have switched to renewable energy.

- In culinary and restaurant businesses can resort to using recyclable materials like bamboo for their food packaging instead of plastics.

- In the automobile industry, Companies like Tesla and Daimler Group have invested heavily in developing electric cars instead of carbon-emitting fossil fuel cars. Other automobile companies should have at least 60% of their cars running on sustainable energy.

- In the electronic industry, companies such as Google, Dell, Apple, and IBM should be committed to producing sustainable electronic components for phones and computers which can be recycled instead of the unrecyclable materials which generate massive electronic waste and pollutes the environment immensely.

- In the Grocery industry, Lidl and Aldi, and others should establish avenues to prevent food waste, as food waste is a major environmental problem. Unsold perishable food can instead be given out as charity donations instead of being disposed of away.

- The fashion industry are major contributors to waste products which are detrimental to sustainability. Brands like Nike, Adidas, and C&A should be committed to reducing waste by producing sustainable products, renewable clothing, and footwear.

Every business organization in its little way commits to avenues that are sustainable even at the cost of their profits. Investing in innovative and resilient ways and structures is the future in ensuring the goal of SDG 9 is met.

7.2 Business Implications

By definition, an SDG targeted at the alliterative trio of industry, innovation, and infrastructure will have large implications for each business and the capacity to supply many of the other SDGs.

The business will be required to invest in and develop much of the infrastructure and R&D programs needed to meet the targets for SDG 9, and will also be one of the important beneficiaries of a renewed main point from governments in these areas.

Increased R&D spending will open up new markets and business opportunities, while the particular focus on getting entry to IT infrastructure will release big productiveness positive factors and new markets, especially in rising economies. Meanwhile, increased get entry to finance for smaller agencies is possible to advantage the business community as a whole.

However, the biggest implications for groups are likely to occur from the way in which governments outline "sustainable" and "resilient" infrastructure. The ambitions do not especially define the terms and the metrics are in a similar way limited to a promise to assess CO2 emissions per unit of value-added

However, if SDG9.1 and its commitment to "develop quality, reliable, sustainable, and resilient infrastructure to support economic development and human well-being" are seen in the context of the other SDGs with an environmental focus, it indicates a shift in both global infrastructure and industrial and innovation strategies.

It is a point similarly hammered domestic by using target 9.4 and its particular pledge to "upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and increased adoption of adoption of easy and environmentally sound technologies and industrial processes" by using 2030. It can also be modified by adding the line "activity in accordance with their different skills," but it still suggests something significant and fast an transformation of global infrastructure and industry.

Under the most ambitious interpretation, SDG 9 implies the phase-out of certain environmentally unsustainable industries, a block on new carbon-intensive infrastructure projects, and a massive increase in green R&D to tackle emissions from embedded carbon-intensive sectors.

All of which would have large implications for the commercial enterprise community, create new markets, and result in big, standard asset risks.

8. Conclusions

Every business has its own experience; however, it is unique, context-dependent, and path-dependent, and thus it became unlikely to be widely replicated. If every business creates a viable situation for all other companies and their better networking creates a better positive response to society, it will create a resilient based impact on this industrial revolution. Lastly, this report highlights the fact that at this stage of 2022 we still couldn't measure the SDGs properly and couldn't complete SDG 9 yet. The indicators are not properly measured yet as well. It has already been 7 years since the introduction of SDGs. Though, lots of countries are trying to ensure SDG and working on those indicators. But it's not enough from the perspective of Environment, Industry, and Innovation for a better future. If people don't support from their place, it won't be possible to achieve all the indicators in time.

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Description of how the question was meant:
Whether there is a possibility of providing them with subsidies, some kind of connection or collaboration with developing countries, which could "assist" them or give them know-how in order to achieve development all over the world and eliminate underdeveloped areas. Whether there is a possibility of some kind of support other than in health care.

Perhaps also to come up with a way how to improve the environment in these countries, i.e., the climate, air pollution, water related issues, such as a shortage of clean, potable water.

Discussion may also focus on how to increase literacy levels in these developing countries, as higher literacy levels could lead to strengthening research capacity, and as a result also development. Perhaps one way of combating illiteracy could be an education fund from GMW (Global Money Week) or another organization in the particular region.

It is possible to say in general how to help these countries in terms of sustainable production and consumption in order to reduce waste production and adopt sustainable practices (and to ensure access to information concerning sustainable development), support developing countries and implement tools for monitoring benefits and shortcomings of sustainable development in the given countries.

Findings arising from the discussion on the subject:
Opinions expressed with respect to this question included:

- Reduce food waste and waste in general; reduce food loss in the process of production and delivery, including during harvest.
- Support developing countries, mainly financially.
- Implement tools for monitoring food wastage and chemical waste disposal management.
- Reduce usage of electricity and other resources.

Summary of our findings and findings arising from the discussion on the given subject:
In our opinion, it is important to implement the aforementioned tools in this area. These tools could be used at landfills as well as incineration plants and other organizations dealing with waste disposal. Waste monitoring would focus not only on household waste, but also waste generated by small as well as large companies. Also monitored would be food waste, incineration of hazardous waste, and handling mineral resources. These tools would first be devised in developed countries and later transferred to developing countries to ascertain the level of wastage in these countries.

This could go hand in hand with increasing literacy levels in developing countries. Using subsidies, for example, people from developing countries could get an education in other

countries, which would increase their awareness of the given issue and they would know how to handle them. A GMW (Global Money Week) fund was established for this purpose, which could be used to benefit developing countries.

As for food wastage, it would be desirable to implement some incentives for inhabitants (not only local inhabitants, but also those in developing countries) related to consumption of food, because apart from packaging, each raw material has its own way of processing and because people do not always know how to process the contents, loss and wastage occur.
Some retailers (for example, Lidl) have found a solution that if there is any produce (fruits or vegetables) in the store that, for example, is missing its packaging, or if the item needs to be sold that day, etc., the food items are put in cardboard boxes, which are then offered to customers at reduced prices. This might be inspiration also for other supermarket chains, which would reduce unnecessary food waste. This does not only concern the Czech Republic, instead it presents a worldwide problem.

As for motivating and incentivizing people, it would be desirable to encourage people to carpool rather than use cars by only one person, and take advantage of public transport in city centers. This would lead to reducing air pollution in urban areas.

It would also be beneficial if countries which have already implemented methods of ensuring sustainable production and consumption could assist developing countries, for example, by way of training selected representatives regarding waste reduction, recycling and how waste can be reused.

Another item in terms of environmental protection, specifically related to climate, is monitoring small and large companies alike by way of audits focusing on how environmentally-friendly the company or plant is, i.e., whether and how they sort waste, whether they pollute the environment with hazardous substances, and what their environmental protection policies are.

There was one other thing that came to our mind, which is again related to education in developing countries. People concerned with this issue could share their newly acquired knowledge on a publicly available website, which might be translated to several languages, by means of which they would contribute to a better understanding of the given issue. This might involve the participation of a number of people concerned with the particular issue.

WEIDEN BUSINESS SCHOOL

Ostbayerische
Technische Hochschule
Amberg-Weiden

Corporate Sustainability Management

Anchoring SDG #14 within the Business

Project Report

Submitted by:

Saili, Gaurav,

Rajat Kumar,

Islam, Md Tarikul,

Rahaman, Mohaiminur

Table of content

Question 1st approached by Islam, Md Tarikul, Rahaman, Mohaiminur

1.1 Sustainable development:

Sustainable development is an approach to development that increases the long-term wealth of the earth's inhabitants. It opposes policies and practices which support economic growth by depleting natural resources or degrading and destroying the earth's natural potential. It supports the planned and controlled use and extraction of renewable and non-renewable natural resources.

"Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

- Our Common Future

Activities are sustainable when they:

1. Use materials in continuing cycles.

2. Use continuously reliable sources of energy.

3. Come mainly from the potential of being human, ie- Communication, creativity, coordination, appreciation, and spiritual and intellectual development.

Activities are non-sustainable when they:

1. Require continual inputs of non-renewable resources.

2. Use renewable resources faster than their rate of renewal.

3. Cause cumulative degradation of the environment.

4. Require resources in quantities that could never be available for all people.

5. Lead to the extinction of other life forms.

- M. Nickerson, Guideposts for a Sustainable Future Project.

2.1 SDG 14 -LIFE BELOW WATER:

Oceans, seas, and other marine resources are vital to human well-being as well as global social and economic growth. The seas encompass more than 70% of our planet's surface and serve a critical role in maintaining life. They are the most diverse and vital ecosystem on the planet, contributing to global and regional elemental cycle as well as climate regulation. Natural resources such as food, materials, chemicals, and energy are all found in the ocean. By increasing fish catches and income, creating new opportunities, promoting health, and empowering women, Marine Protected Areas help to alleviate poverty. Coastal towns, which accounted for 37 percent of the world's population in 2010, are particularly dependent on marine resources. Oceans also aid in climate regulation by absorbing heat and carbon dioxide.

2.2 Targets of Life below water:

Everyone may contribute to achieving Global Goals. Use these goals to inspire action for ocean conservation and sustainable use. I am going to give some companies example which is engaged with a target of life below water.

DANONE

Danone S.A. is a multinational food products company headquartered in Paris and founded in Barcelona, Spain:

Danone is engaged on SDG LIFE BELOW WATER targets 14.1 as a commitment Danone's objective is to promote the circular economy of packaging by supporting the development of processes and systems that turn waste into resources. It builds three strategies-

Circular packaging: Initiatives to improve product design and develop alternative delivery and reuse models (target: use 100% reusable, recyclable or compostable packaging by 2025).

Recycle, re-use, or compost in practice: improvements in the effectiveness, efficiency, and inclusiveness of collection and recycling systems, and to boost recycling (target: launch or support collection and recycling initiatives in each of our 20 largest markets by 2025)

Preserving natural resources: Including recycled materials in our packaging and developing the use of renewable materials (targets: 50% recycled material on average for our

water and beverage bottles by 2025; market 100% recycled PET bottles in all our major markets; zero polystyrenes worldwide by 2025)

14.1 REDUCE MARINE POLLUTION

During the last decade, the percentages of marine pollution have increased dramatically. The main sources of marine pollution are chemical streams, solid wastes, radioactive elements, industrial and agricultural wastes, man-made sediments, and oil spills. To reduce marine pollution and save our water. The UN already has set a goal to prevent and sigenficienty reduce marine pollution of all kinds by 2025.

14.2 PROTECT AND RESTORE ECOSYSTEMS

By 2020, sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and taking action for their restoration to achieve healthy and productive oceans.

14.3 REDUCE OCEAN ACIDIFICATION

In the last 200 years, the percentages of carbon dioxide (CO_2) have increased gradually. As we know, The ocean absorbs nearly 30% of the carbon dioxide (CO_2) that is released into the atmosphere. When the ocean is absorbing more CO_2, The percentage of PH level will get low. The ocean's average pH is now around 8.1. it will be getting low when seas and oceans are absorbing more CO_2. anything below PH7 is considered acidic. which is why the UN has set a goal to minimize and address the impacts of ocean acidification by 2030.

14.4 SUSTAINABLE FISHING

The fishing industry is any activity that involves catching, processing, and selling fish and seafood for either recreational or commercial purposes.
Nowadays, more than 300 million people are directly or indirectly involved in the fishing industry. The commercial industry is responsible for catching nearly 93.3 million tonnes of wild fish and nearly 48 million firmed fish annually. That's why the UN has set a goal to control fishing by 2030.

14.5 CONSERVE COASTAL AND MARINE AREAS

By 2020, conserve at least 10 percent of coastal and marine areas, consistent with national and international law and based on the best available scientific information.

14.6 END SUBSIDIES CONTRIBUTING TO OVERFISHING

By 2020, prohibit certain forms of fisheries subsidies that contribute to overcapacity and overfishing, eliminate subsidies that contribute to illegal, unreported, and unregulated fishing and refrain from introducing new such subsidies, recognizing that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organization fisheries subsidies negotiation.

14.7 INCREASE THE ECONOMIC BENEFITS FROM SUSTAINABLE USE OF MARINE RESOURCES

Marine resources are the things that plants, animals, and humans need for life that originate in the ocean. Fisheries, Oil, Coral, and Gas are the main marine resources. The UN has set a goal to use all of these for developing our economy. We can use small islands as a tourism destination as well as sustainable management of fisheries, and aquaculture.
By 2030, increase the economic benefits to Small Island developing States and least developed countries from the sustainable use of marine resources, including through sustainable management of fisheries, aquaculture, and tourism.

14. 8 INCREASE SCIENTIFIC KNOWLEDGE, RESEARCH, AND TECHNOLOGY FOR OCEAN HEALTH

Increase scientific knowledge, develop research capacity and transfer marine technology, taking into account the Intergovernmental Oceanographic Commission Criteria and Guidelines on the Transfer of Marine Technology, to improve ocean health and enhance the contribution of marine biodiversity to the development of developing countries, in particular Small Island developing States and least developed countries.

14. 9 SUPPORT SMALL-SCALE FISHERS

 Provide access for small-scale artisanal fishers to marine resources and markets.

14. A   IMPLEMENT AND ENFORCE INTERNATIONAL SEA LAW

Enhance the conservation and sustainable use of oceans and their resources by implementing international law as reflected in UNCLOS, which provides the legal framework for the conservation and sustainable use of oceans and their resources, as recalled in paragraph 158 of The Future We Want.

3.1 The connection between business and SDG 14:

Human activity and marine life have grown inextricably connected, with each having enormous consequences for the other. Almost three billion people rely on marine life for their survival. This shows that protecting marine life while promoting its sustainable use is critical. Several business sectors, such as manufacturing, chemicals, FMCG, Oil & Gas, etc., are polluting and affecting the ecosystem.

1. **From the chemicals and manufacturing industry**

The American Chemistry Council manages Operation Clean Sweep (OCS), which encourages plastic resin handling businesses to strive for 0% pellet, flake, and powder loss in top plastics out of the marine environment.

2. **Microplastics**

Plastics with a length of less than 5mm are known as microplastics. These are frequently generated when larger plastic parts deteriorate due to rust. These are floaters that can be found in both air and water. They have an impact on marine life such as plankton and algae in the ocean. Microplastics have an impact on the marine environment's stability and risk its collapse because they are present at the bottom of the food chain.

3. **Overfishing**

According to the UN, almost 75% of world fisheries are either 'fully exploited', 'over exploited', or 'significantly depleted'. Overfishing is a relatively new concern that evolved as a result of improved technology such as sonar and deep-sea fishing, which allowed for much larger-scale fishing. This is unsustainable and may result in the commercial extinction of the species. Overfishing also devastates marine ecosystems by disrupting population balance and consequently destabilizing the ecosystem.

4. Ocean acidification

Over the last 20 million years, the rate of ocean acidification has been exponential, far quicker than the natural rate. The pH of the ocean has decreased to 8.1. Marine life is influenced by decreasing pH levels. These organisms' shells and exoskeletons disintegrate at lower pH levels. Damaged shells must be regrown and thickened to prevent further damage; however, the animals expend energy doing so, reducing their chances of survival and reproduction. Animals may evolve to adapt to more acidic environments, but this takes a long time and is considerably slower than the current acidification rate. This has an impact on the food chain and can lead to ecosystem collapse.

5. Oil and offshore mining

Spills have devastating effects on marine life and coastal communities. People who eat oil-contaminated fish and shrimp may become ill. Exploration teams' seismic surveys can kill fish and dolphins.

4.1 Businesses affected by SDG 14

The fishing industry and food firms will be the most evident business implications of SDG14. The majority of the risks associated with SDG14 stem from its failure to be met. Unsustainable ocean use is intrinsically unsustainable, and the effects of overfishing and marine pollution will eventually trickle up the food chain, wreaking havoc on the global economy. Failure to address

overfishing, eutrophication, and other forms of marine pollution threatens coastal economies that rely on marine resources for fishing, tourism, or flood protection. The Great Barrier Reef in Australia, for example, is estimated to be worth $6.4 billion a year to the country's economy (though it is truly priceless), yet it is facing significant problems from coral bleaching and other factors. However, despite widespread public support, initiatives to strengthen marine conservation are always contentious, and they can pose considerable hurdles for enterprises. The plastics sector, consumer products companies, and retailers are all being compelled to adjust to a changing market and regulatory landscape as a result of public pressure and legislative initiatives to combat plastic waste. When the spotlight moves to the escalating impact of eutrophication, the agricultural sector should expect to experience comparable challenges. Effective sustainable fisheries management and better marine protection zones would benefit the fishing and food industries in the long run, but fishing trade organizations are concerned that over-zealous rules could damage business income. Any crackdown on illegal and unsustainable fishing poses a risk to consumer-facing food corporations, who have already been singled out by activists for failing to implement stricter protections throughout their supply chains.

5.1 Corporate integration with SDG-14:

We saw businesses taking an increasingly strategic approach to the SDGs. Business contribution to the SDG's Goals will be key to their achievement. Every state will have its priorities that will guide the actions that must be taken. You'll want your business to align with the SDGs so that it has a positive effect on a country's ability to achieve its objectives, rather than hindering it. There's a lot to think about, not just for the country or countries where you presently operate, but also for your supply chain and plans to expand into new markets and territories.

"The SDGs are very important, and they must be immersed in the company's strategy. Understanding them, knowing how to achieve the targets, integrating them into management decisions, and measuring progress towards them, are crucial. We think the achievement of the SDGs relies on not making them a requirement nor a trend but involving them in the dynamics of the organization. "

- Maria Isabel Cárdenas, Sustainability Director, Cementos Argos S.A

SDG Compass assists businesses in aligning their strategy, as well as measuring and managing their contributions to the SDGs. SDG Compass was created to assist huge international corporations. It's intended for use at the entity level, but it can also be used at the product, site, divisional, or regional levels as needed. . If businesses want to integrate with SDG 14 they must follow the five steps of the guide:-

Understanding the SDGs

At first, companies must be intimate with SDG 14 life below water and also be familiar with targets of life below water which were set by the United Nations.

Defining priorities

Companies are encouraged to measure their priorities to minimize the risk, they can do it through assessment. If they want to develop their value chain they should focus on SDG 14 targets. They can create a positive impression by following the SDGs.

Setting goals

Businesses goal is essential for company development. It helps companies to boost their performance. When a company's goals align with SDGs, the leadership can demonstrate its commitment to sustainable development.

Integrating

Companies must integrate SDG 14 targets into the core business and governance to achieve set goals. If we don't integrate those policies into the organization their negative effect hamper marine life. It also impedes the company's value chain.

Reporting and communicating

Through reporting and communicating, companies can inform their shareholders, customers, suppliers, and NGOs that they are working for life below water and their initiative toward saving marine life.

6.1 Companies Show Enthusiasm in Implementing SDG 14

Private enterprises continue to express their support for the execution of Sustainable Development Goal 14 (life below water). Albertsons Companies and Calysta are the most recent companies to announce how they would assist the international community in meeting ocean-related goals. Their activities, which target marine plastic waste, focus on sustainable fisheries and aquaculture in particular and join announcements from other industry leaders such as Dell, Adidas, and the New Plastics Economy.

Calysta, a firm that creates sustainable solutions to boost global food security, has vowed to support SDG 14 by developing technology to encourage sustainable aquaculture, the world's fastest-growing food production system, which is driving demand for new protein sources. Calysta manufactures FeedKind protein, a sustainable, traceable, and natural feed ingredient that is not derived from wild fish. FeedKind is designed to meet protein demand while also assisting in the restoration of fish supplies and the mitigation of harmful traditional fishing practices, according to the business. Calysta also supports the FAO's Blue Growth Initiative, which aims to promote sustainable aquaculture practices by 2020 through market-based initiatives.

Moreover, during the Oceans Conference, which took place in New York from June 5 to 9, 2017, Dell and Adidas made commitments to limit the impact of plastic pollution Dell launched the world's first commercial ocean plastics supply chain, to package its products with trash collected from beaches, coastal areas, and rivers. In 2017, Adidas plans to produce one million pairs of ocean plastic shoes, equal to 11 million plastic bottles, and five million pairs in 2018.

Albertsons Companies, one of the major supermarket chains in the United States, has pledged support for SDG 14. During the UN Ocean Conference, it joined the Seafood Task Force and signed the promise of Committing to Social Responsibility in Global Fisheries and Aquaculture, a voluntary commitment made by the commercial sector, NGOs, and the UN. The Seafood Task Force was founded to address issues of forced labor, illicit fishing, and human trafficking in Thailand's seafood supply networks, and it intends to serve as a model for worldwide supply chains.

11

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Question 2ⁿᵈ & 3ʳᵈ approached by Rajat & Gaurav

1.1 General Challenges and Obstacles to Sustainable Development Goals

The SDGs comprise up to 17 major concerns to be addressed and deciding which ones should be prioritized by nations is a difficult task. While emphasizing specific SDGs might help with other SDGs as well, for example, reducing poverty can improve citizens' health and well-being- some SDGs may be incompatible due to their nature.

The 17 Sustainable Development Goals should not be dismissed as mere talking points. Instead, people must take concrete and informed activities that have real-world consequences. The problems of the Sustainable Development Targets are various, but obtaining trustworthy data, selecting fair and enforceable goals to prioritize, and holding the most relevant parties accountable are the most pressing issues that the international community must address.

The Sustainable Development Goals (SDGs), proposed in 2012 and officially accepted in January 2016, superseded the Millennium Development Goals as the UN Development Program's (UNDP) priority and guide concrete efforts on the ground. The goals call for poverty and hunger to be eradicated by 2030, as well as fifteen other targets in the areas of health, education, gender equality, sanitation, economic equality, climate change, life on land, life below water, etc.,

Slower economic growth, long-term corruption and inequality, unfavorable demographics in various forms, and widespread epidemics
These are some of the challenges faced in attempting to implement the 17 Sustainable Development Goals by 2030, but the three surprising challenges could easily be overlooked but require immediate attention.

The key challenges are as follows:

- Instability, such as the conflict between nations

- Implementation, such as ensuring programs fit the local context

- Governance, such as the political will to transform development programs into sustainable long-term practices

Rajat Kumar, Gaurav Saili

2.1 Life below water

The 2030 Agenda for Sustainable Development, adopted at the United Nations (UN) Sustainable Development summit in September 2015, was fined by the UN Secretary-General as an "Agenda for people". Its key component, the Sustainable Development Goals (SDGs), were the outcome of an intergovernmental process considered by some as the most democratic and inclusive accomplishment in the history of the UN.

It is no surprise that a stand-alone SDG – SDG14 – is dedicated to the oceans and their conservation and sustainable use.

Rajat Kumar, Gaurav Saili

The seas span two-thirds of the earth's surface, provide food for billions of people, regulate temperature, house a huge amount of biological diversity, and facilitate essential economic activity. As a result, the 2030 Agenda prioritizes a healthy ocean as part of the global sustainable development agenda and sets goals for addressing some of the ocean's most critical concerns, such as overexploitation of natural resources, climate change, and pollution.

Rajat Kumar, Gaurav Saili

3.1 Goal #14 Challenges and Solutions

1. **Over 3 billion people depend on Marine and Coastal Biodiversity for their livelihoods. Pollution threatens the world's largest source of Protein.**

   The chemical contamination of the seas and the millions of tons of mismanaged trash dumped in the oceans each year are causing irreversible damage to marine life as we know it. The outcome is a global calamity, with over 100 million marine animal lives lost each year and the ocean's ecosystem deteriorating. Ocean pollution affects about 1,000 kinds of marine animals, and we now have over 500 dead zones where marine life can no longer exist.

Solution: Reduce pollution, Moreover Protect Marine and Coastal Ecosystems. Some choices which we can adopt to help protect and restore our Marine Ecosystem:

- Use Plastic-free alternatives
- Reduce Carbon Footprint
- Eat Sustainable Sea Food
- Leave nothing behind at the beach
- Explore the Oceans

2. **40% of the World's Oceans suffer from Overfishing, Poor Fishing Practices, and Poor Waste Management.**

Some poor fishing practices.

- **Trawling:** Trawlers drag nets across the bottom of the seafloor to catch the marine life that lives on or near it.
- **Cyanide Fishing:** As the name describes, this fishing method involves spraying a cyanide mixture into a fish's habitat to stun fish and catch them alive.
- **Dynamite Fishing:** Also known as "blast fishing" or "fish bombing", dynamite fishing is an overfishing practice that uses explosives to stun or kill schools of fish at once. A blast can kill up to 400kg of fish at once.

Solution: End harmful Fishing subsidies and stop unreported, illegal, unregulated, and destructive fishing practices.

- Buy locally caught fish rather than imported fish.
- Checking labels and reading about how the Seafood was caught.
- Never buy endangered species.
- Buy those sea products which have MSC Tick (Marine Stewardship certification). The blue fish tick from the Marine Stewardship Council indicates certified sustainable seafood from healthy, wild fish populations. (Totally traceability)

Rajat Kumar, Gaurav Saili

3. **Coral Reefs which provide a home to 25% of all Marine life are being destroyed at an alarming rate.**

Sometimes, coral mining can provide short-term benefits that may appear attractive to locals, while it tends to have much worse long-term costs.
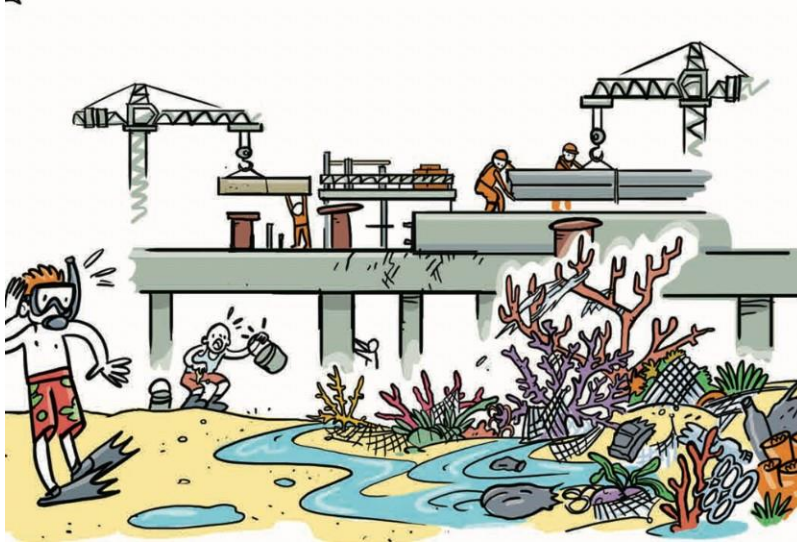
Solution: Fight climate change, reduce sedimentation, stop coral mining, and promote sustainable tourism.

- Encouraging the community to get involved in protecting coral reefs because of the long-term benefits to everyone is more effective at ensuring sustainable practices than outright banning harmful activities.
- There are several methods depending on where you are trying to apply sediment control. These can include stormwater best management practices such as storm drain filters, erosion control, sediment barriers, and turbidity curtains.

Rajat Kumar, Gaurav Saili

4.1 Great Pacific Garbage Patch

The Great Pacific Garbage Patch is a floating island of debris, accumulated in the North Pacific Ocean by an extensive system of currents called gyres. It is built up from two other waste patches, the western garbage patch near Japan and the eastern garbage patch near America's west coast near California and Hawaii.

The North Pacific Subtropical Convergence Zone links the east and western garbage patches, acting as a highway for waste to move from one to the other. Because of this, a small item of debris dropped near California can travel across to Japan, then eventually get sucked up by these swirling garbage patch vortexes.

The great pacific garbage patch size is quite shocking - These patches of trash are said to be twice the size of Texas and float on the surface but do drop several meters into the ocean in places, which makes the correct size challenging to measure. The world's largest garbage site is mainly made up of microplastics creating a vast cloud, with newer items of debris that haven't broken down as much floating around like chunks in a soup. The great pacific garbage patch effects on marine life are extremely significant
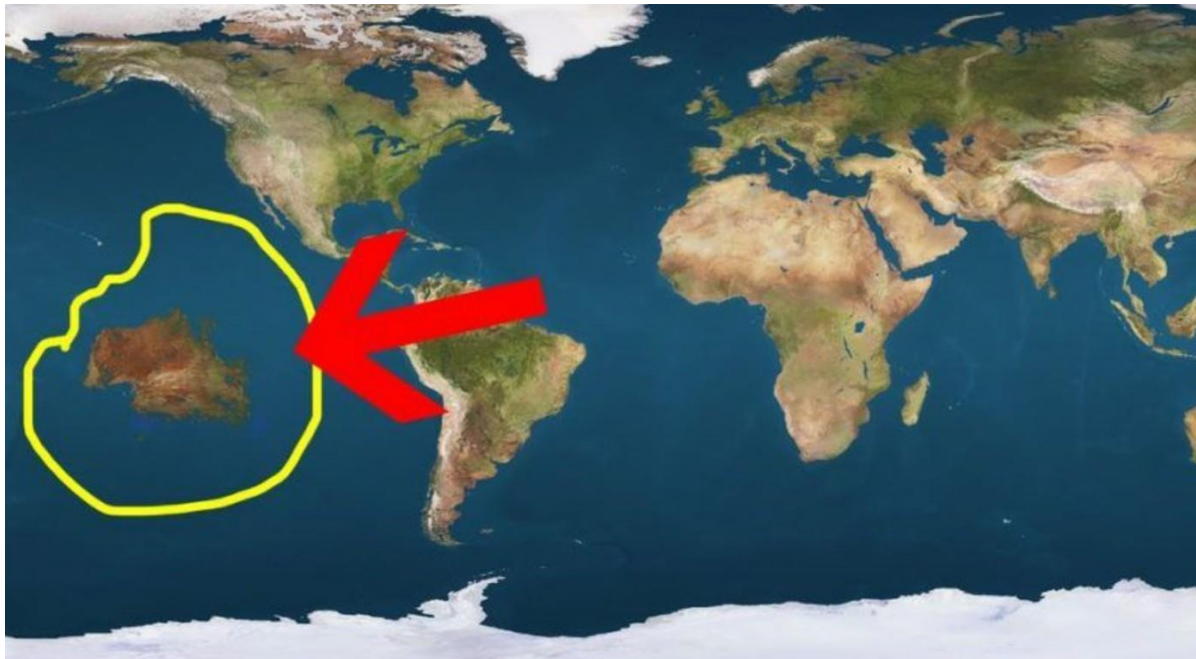
Shocking Ocean Pollution Statistics

- 100 million marine animals die each year from plastic waste alone.

- 100,000 marine animals die from getting entangled in plastic yearly – this is just the creatures we find!

- In the past 10 years, we've made more plastic than in the last century. By 2050, the pollution of fish will be outnumbered by our dumped plastic.

- China is ranked #1 for mismanaged waste and plastics. However, the US is in the top 20 with a more significant waste per person contributions.

- 300 million tons of plastic get created yearly, and this weighs the same as the entire human population, and 50% is single use only.

- In terms of plastic, 8.3 million tons are discarded in the sea yearly. Of which, 236,000 are ingestible microplastics that marine creatures mistake for food.

- Plastics take 500-1000 years to degrade; currently, 79% are sent to landfills or the ocean, while only 9% are recycled, and 12% get incinerated.

- 1950-1998 over 100 nuclear blast tests occurred in our oceans.

- 500 marine locations are now recorded as dead zones globally, currently the size of the United Kingdom's surface (245,000 km²)

- 80% of global marine pollution comes from agriculture runoff, untreated sewage, and the discharge of nutrients and pesticides.

- 90% of the worldwide ocean debris comes from 10 rivers alone.

Rajat Kumar, Gaurav Saili

5.1 SDG #14 Conflicts with other SDGs

Conflict with SDG #7 (Affordable and Clean Energy)

Nations are building huge dams on rivers for clean energy generation by holding the water and then releasing irregularly. This destroys the natural flow that directly affects the life underwater.

Dams are everywhere and they are getting bigger all the time. Hydropower is one of the oldest methods of Power generation that we all know but is this method really helping us? There are a lot of negative impacts of these dams on aquatic habitats.

Loss of Habitat

- The population of fish is dependent on the aquatic habitat, which supports all the biological functions. Dams block the passage of the migration of fish, which disrupts the life cycle of many fishes.

- Most salmon are adapted to living in rivers so changing their habitat to a lake often has negative consequences on their life cycle. This is especially true for activities such as spawning.

- Dams disrupt fish and bird migration. The change in the composition of the river interferes with the chemical signals guiding species through their biological processes. And the physical barrier of the dam blocks species from their traditional spawning and rearing locations. As a result of this, pollution, and the effects of climate change, freshwater species have lost 76 percent of their populations since 1970.

Water Quality and Quantity

The purpose of many dams in the Pacific Northwest is to collect and store water for uses such as hydropower and irrigation. Water diverted from the river results in lower natural flows and less habitat for fish downstream. In addition, changes occur in the quality of water when it is stilled behind a dam.

- **Flow Timing:**

  Fish are adapted to a particular natural pattern of flows in a river. In the northwest, most rivers have peak flows in the spring and lower flows in summer. The way dams use water often results in changes to these natural patterns. Reductions in peak flows may

Rajat Kumar, Gaurav Saili

inhibit the formation of pools and riffles and other habitat types that are important to fish.

- **Oxygen:**

  Water released from the bottom of the reservoir is often low in oxygen, causing problems for fish downstream. However, water falling over a spillway may mix more oxygen into the water.

- **Ramping:**

  There may also be problems if dams suddenly release water or reduce flows causing river levels below the dam to rise or fall suddenly, potentially stranding fish. This is sometimes done to answer the needs of power generation, water is stored in the reservoir during periods of low power demand and then released later to generate electricity when demand is high.

The solution to Dams:

- To reduce the impact of dams, they should be constructed with a design for fish passage included.
- Another solution could be to trap them in tanks (called fish lifts or transport systems known as trucking) and release them upstream.
- Demolish those dams which generate very little or no electricity. Only 3% of dams in the US create hydroelectric power.
- Some Hydropower plants simply divert water rather than damming a whole river.
- Generate power using natural wave surges in the oceans is one of the modern ways of generating electricity, which is very innovative.
- Another way companies are using nature to power our appliances is with wind energy.

Conflict with SDG #9 (Industry, Innovation, and Infrastructure)

CO_2 released by industries is dissolved in water bodies which are affecting marine life by making the water acidic. This is commonly known as ocean acidification.

Ocean acidification:
The oceans have absorbed more than a fourth of the anthropogenically generated atmospheric carbon dioxide over the past 200 years. Without this natural store the greenhouse gas concentration in the atmosphere would be much higher and the temperature on the Earth quite a bit warmer. However, this storage function has a high price: the oceans have become nearly 30 percent more acidic since the beginning of the Industrial Revolution.

Corals as a high-risk group:

Rajat Kumar, Gaurav Saili

Today the most species-rich ecosystems of the oceans, the coral reefs, are already suffering from too warm and too acidic living conditions in some regions. By the end of this century, it is even possible that only 30 percent of all corals will have enough building material for their skeletons. This also has consequences for us humans: 400 million people currently owe their food and protection against storm surges to intact coral reefs.

Expensive consequences: The consequences of ocean acidification for corals and mollusks alone will cost 1,000 billion US dollars. Scientists have calculated this amount with the help of forecasts.

Danger at early life stages: Ocean acidification represents a threat, particularly for the young life stages of marine animals, such as eggs or larvae. Some larvae, for instance, no longer grow and develop so well in more acidic water. In contrast to more mature specimens, they have not yet developed all the internal mechanisms necessary to protect themselves successfully against external influences.

Only one way out

There is only one effective way of combating ocean acidification. We humans must reduce our carbon dioxide emissions. However, even if we could stop all emissions from one day to the next, the ocean would need thousands of years to recover completely.

Conflict with SDG #15 (Life on Land)

For protecting life on land, we are ultimately affecting the life below water by increasing the shifting of dump yards from land to water.

The existence of terrestrial species, including humans, depends on life underwater. Yet, pollution, global warming, unsustainable fishing, and degradation of natural habitats are threatening marine and coastal biodiversity.

More than 3 billion people – depend on marine and coastal biodiversity for their livelihoods. That makes it half of the global population. But we are focusing on land only.

Rajat Kumar, Gaurav Saili

"Life underwater is essential to life on land," said General Assembly President Tijjani Muhammad-Bande (Nigeria). "The ocean produces half of the oxygen we breathe and provides food for 3.2 billion people around the world."

SIMPLE THINGS TO DO

- Find a Goal 14 charity you want to support. Any donation, big or small, can make a difference!

- Reduce waste – much of the waste that we produce on land ends up in the oceans. Stop using plastic bags: Usage and wrong disposal of plastic is a major cause of marine pollution.

- Organize a cleanup project for rivers and oceans. Engage your whole community to clean up a local river, seaside, or ocean.

- Never buy bottled water – boil, filter, chlorine, rainwater, do what you can.

- Run a campaign on the effects of plastic use on the seas and oceans.

- Buy local and certified fish. You can support small-scale producers by shopping in local markets and shops.

Rajat Kumar, Gaurav Saili

6.1 Materiality Assessment
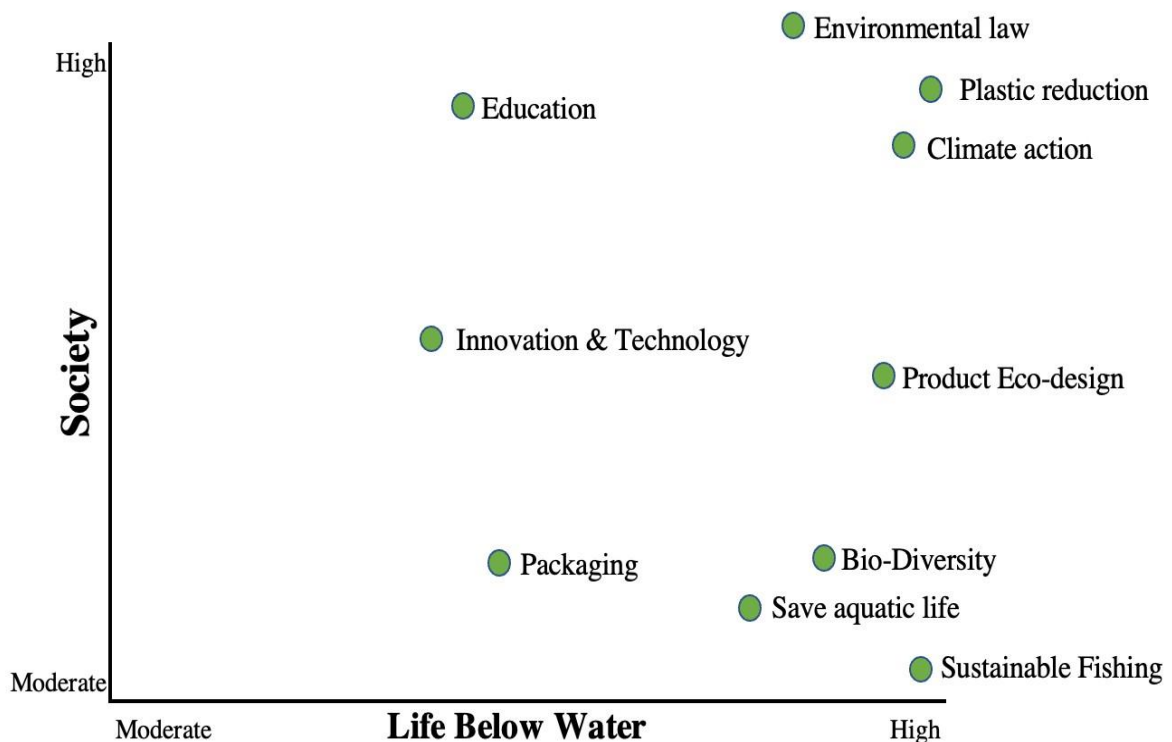
We developed a materiality assessment focussing on key targets provided by United Nations (UN). Depending on the dates the target is to be achieved we placed the points in such manner. In addition, we will discuss how some companies are practically contributing to SDG 14 by following the mentioned targets.

➢ Plastic waste reduction: Reducing all kinds of plastic waste from land-based activities including marine debris. One of the very striking examples of marine pollution that mankind faces today is the Great Pacific Garbage Patch.

➢ Climate action: Our planet is getting warmer day by day because of the increasing CO2. By now Oceans have absorbed around half of all the CO2 we humans have put out. The CO2 absorbed by Sea reacts with water and forms an unstable molecule called Carbonic acid. Which is affecting organisms like coral and mollusks. We should focus on reducing carbon emissions.

➢ Fishing: How can companies ensure that in their supply chain there happens to be no overfishing, no illegal fishing?

➢ Use of innovation and technology: Increase scientific knowledge to improve ocean health and enhance the contribution of marine biodiversity.

➢ Packaging and waste: Reducing the environmental impact of packaging and waste, including protection of marine environments.

26

Rajat Kumar, Gaurav Saili

How can an organization manage the supply chain today extent that they cut down on the plastic that their production causes either by end-use or indeed by all the plastic that they use for packaging for their product at large?

➢ Product ecodesign: Developing more environment-friendly products (Devices, consumables, accessories, and packaging) by improving recyclability, efficiency, and repairability.

➢ Biodiversity: Managing and reducing the negative impacts on the marine ecosystem.

➢ Environmental Laws: Provides the legal framework for the conservation and sustainable use of oceans and their resources.

➢ Education: Spreading awareness and educating people about the different marine life that needs our protection.

➢ Save marine animals: Protect marine species by stopping the illegal fishing of rare species which are close to extinction.

7.1 Good Practices

4OCEAN

- It aims to clean up plastics from the ocean with the help of local communities. Materials recovered from the sea are used to develop new and innovative products that raise awareness about the ocean plastic crisis.
- In 2015, they introduced the 4Ocean bracelets which help fund their global ocean clean-up operation. The 4Ocean bracelets also educate about the different marine life that needs our protection.
- To date, they have pulled more than 15 million pounds of trash in the United States, Indonesia, Haiti, and Guatemala.

ECHANDIA MARINE

- Sweden-based Echandia Marine, a Global Compact member, has completed its first electrically propelled passenger ferry installation, shuttling citizens throughout the city's archipelago.
- The ferry has demonstrated commercial viability and can operate for an hour on just 10 minutes of charging. The ferry consumes just 500 Mwh of energy per year, and operates at 90 percent energy efficiency, compared to 28 percent to 35 percent for a standard diesel engine, according to the company.

Rajat Kumar, Gaurav Saili

UNITED BY BLUE

- United by Blue is a sustainable outdoor apparel, Company. This ocean company promises that for every product sold, they will remove one pound of trash from oceans and waterways.
- Through their company-organized and hosted clean-ups, they have collected more than 3.6 million pounds of trash.
- If you're looking for eco-friendly products for your adventures and travels, do check out United by Blue.

MOWI

- At Mowi, they have embraced sustainability as an opportunity and are very proud of producing food that is healthy for people and good for local communities and the planet. Leading a Blue Revolution is not easy, but they believe Mowi's unique strengths of a global presence, being fully integrated and being a front runner on environmental stewardship and innovation will make a positive impact in the world.
- The Blue Revolution Plan will help them to focus on being part of the solution to those challenges where they operate an eco-efficient value chain and raise their salmon in harmony with nature."
- They do fishing in a sustainable manner in order to work in a harmony with the Sea.
- They pursue an integrated sustainability strategy aligned with the United Nation's Sustainable Development Goals (SDGs).

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Rajat Kumar, Gaurav Saili

Project Report
SDG Goal 8

Corporate Sustainability Management

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Table of Content

Sustainable Developments Goals

The Sustainable Development Goals, often known as the Global Goals, are a set of 17 interconnected global goals aimed at providing a "blueprint for a better and more sustainable future for all." The United Nations General Assembly established the SDGs in 2015, with the target of achieving all the goals by 2030. The 17 goals are:

GOAL 1: No Poverty

GOAL 2: Zero Hunger

GOAL 3: Good Health and Well-being

GOAL 4: Quality Education

GOAL 5: Gender Equality

GOAL 6: Clean Water and Sanitation

GOAL 7: Affordable and Clean Energy

GOAL 8: Decent Work and Economic Growth

GOAL 9: Industry, Innovation and Infrastructure

GOAL 10: Reduced Inequality

GOAL 11: Sustainable Cities and Communities

GOAL 12: Responsible Consumption and Production

GOAL 13: Climate Action

GOAL 14: Life below Water

GOAL 15: Life on Land

GOAL 16: Peace and Justice Strong Institutions

Decent work and Economic growth

Decent work and Economic growth is no 8 SDG goal of United Nations. Economic growth must provide not just any kind of work, but 'good' ones for a society's long-term economic progress and well-being. Economic growth should be a good factor for the entire world. As a

result, we must ensure that economic expansion produces respectable and meaningful jobs while avoiding environmental harm. We must safeguard workers' rights and put an end to contemporary slavery and child labour once and for all. We can ensure that everyone benefits from entrepreneurship and innovation if we promote job creation with improved access to banking and financial services.

Targets of SDG-8

1) Sustainable economic growth
2) Diversify, innovate and upgrade for economic productivity
3) Promote policies to support job creation and growing enterprises
4) Improve resource efficiency in consumption and production
5) Full employment and decent work with equal play
6) Promote youth employment, education and training
7) End modern slavery, trafficking, and child labour
8) Protect labour rights and promote safe working environment
9) Promote beneficial and sustainable tourism
10) Universal access to banking, insurance and financial services

How SDG 8 affects business?

Most of the population in this world maintaining their lifestyle below the breadline, which is indicate poverty as well. The actual reason behind this is lack of proper job facilities that lead to an uneven distribution of economic growth. It has been shown that number of unemployment people increasing day by day and dangerous thing is most of them are young people. For this reason, more than 470 million job position have to be created by 2016 to 2030. SDG 8 set a target about 7% yearly domestic growth for developing countries. For that reason, target to create decent job opportunity for all people in this world by 2030, especially young people with upgrading technology, proper financial services, entrepreneurship, and creation of smaller business. Regarding this issue: SDG-8 Decent Work and Economic Growth how impact on business.

1. Creating positive work experience in the business: Every employee wants to continue their daily work without any stress and other negative issues. A business institute can make a decent work environment in various way, for example:

A. Proper training facilities.

B. Encourage employees to build teamwork and collaboration.

C. Build a strong corporate culture.

D. Provide opportunity for leading.

E. Proper valuation for good work.

2.Creating better quality of life in business: Quality of life in business means the level of satisfaction regarding activities performed and the corporate environment. A good business organization offer their employees personal and professional development, for example:

 A. Better salary range according to the lifestyle.

 B. Minimize extra working hours and work stress.

 C. Additional investment for employee skill development.

 D. Congratulation given by supervisor or institute against proper work.

3. Create positive reputation for business: This is a very important thing to create strong reputation for business. Based on reputation customers can easily believe these products which is produced by regarding companies. On the other hand, a business reputation can also destroy in an instant, and it is long road to rebuilding. There are many ways to create positive reputation for business like:

 A. Be trustworthy about products and services.

 B. Provide good customer service.

 C. Invest money for social development.

 D. Follow all rules and law which is set by government or other parties.

 E. Follow all the criteria for decent work and economic growth which is set by UN.

4.Establishes Global economy: Global economy expected to increase 5.6% for every year. That is why every business institute should be focused on how to help for achieving this target. For that reason, company will try to do make some new, for example:

A. Invest on achieving new technology or idea.

B. Product diversification and new design.

C. Improve product quality and offer that for target customers.

D. Achieving new technology from around the world.

E. Connected with global community and brand.

F. Greater ideas from big or already established company for future development growth.

Starting Points for Corporate Integration:

Effective guidance on goal 8 is necessary, with an involvement in corporate strategy and by top level management, to guarantee that the appropriate moral standards are integrated in all levels of the firm and action on goal 8 becomes part of all operations. Organizations meet the challenges and comprehend the opportunities presented by adopting responsible business will be the success stories of the coming decades.

1. **Understanding the SDGs:** Even though IBERDROLA focuses its efforts on the SDGs where it can make the biggest difference: cheap and non-polluting energy (Goal 7) and climate action (Goal 13), it contributed to the SDG for Decent Work and Economic Growth focuses on encouraging inclusive and sustainable economic growth, full and productive employment, and decent work for all (Goal 8). IBERDROLA has already taken steps to support SDG 8 action and initiatives, such as improving employee morale, improving quality of life, generating a positive business reputation, and contributing to global economic growth.

2. **Defining priorities:** Along with goal 7 and 13 IBERDROLA priorities other SDGs by The Board of Directors. They approved a new long-term remuneration plan (Strategic Bonus 2020-2022) at the 2020 General Shareholders' Meeting, which is linked to both economic/financial performance (changes in Net Profit, Financial Strength, and Total Shareholder Return) and contribution to the UN 2030 Agenda and Sustainable Development Goals (SDGs). These goals allude to the struggle against climate change, the push for supply chain sustainability, and the commitment to equal pay for men and women in regard to the latter issue.

3. **Setting goals:** By 2025, the SDG 8 goal of IBERDROLA is to create over 500,000 jobs (direct, indirect, and induced employment). There are approximately 400,000 direct, indirect, and induced work jobs worldwide. It has a GDP effect of around €34,000 million in the nations where it operates. Apart from that, The IBERDROLA company drives economic and social growth by providing secure and high-quality jobs. In this regard, it has pledged to investing €75 billion until 2025, rising to €150 billion by 2030, in order to strengthen the industrial fabric and create jobs in the countries where it works.

4. **Integrating:** Sustainability integration has the potential to revolutionize all parts of a company's core group business, including product and service offerings, client segments, supply chain management, raw material selection and usage, transportation and distribution networks, and product end-of-life. Create industry standards in occupational health and safety across the organization, cultivating a culture of excellence in management, and coordinating worldwide proactive initiatives. It implements a system that allows monitor modules for incident rate indicators, internal audits, and employee danger warnings, not only for health and safety, but also for implementing the Zero Accident Plan to lower the accident rate. By focusing on professional competency and employee quality of life, IBERDROLA provides a welfare state. It was included in the Bloomberg Gender-Equality, defining priority initiatives and ensuring their completion.

5. **Reporting and communicating:** It is essential to regularly report on progress and communicate the company's commitment to sustainability. ESG issues have been an important component of the company's strategy during the last two decades. IBERDROLA fulfills its commitment by being open about ambitious, relevant, and quantifiable goals that represent the company's priorities in terms of contributing to sustainable development. It has built channels of communication and engagement with its stakeholders based on the principles of the AA1000 Assurance Standard, as detailed in the Stakeholder Engagement Policy and Statement of Non-Financial Information. A multidisciplinary team comprised of corporate companies and areas was formed to write the report and the partnering organizations ensure that the information provided is accurate.

Obstacles or possible conflicts with other SDGs in reaching SDG8 and possible solutions

The United Nations' Sustainable Development Goals provide a blueprint for achieving peace and prosperity for people all over the world, offering developed and developing countries a set of strategies to end poverty, improve health and education, and combat climate change. However, the 17 goals are highly interdependent, which may result in conflicting interactions and divergent outcomes. The possible conflicts or challenges are:

1. **Effect on public health because of rapid industrial growth (*Conflict with SDG -3*)**

If we look at the history, we will see that economic growth has always serious health problem of public. Rapid industrial growth plays a vital role to pollute the environment which lead to climate change, and this have negative impact on public health like perinatal disorders, infant mortality, respiratory disorders, allergies, malignancies, cardiovascular disorders, increased oxidative stress, endothelial dysfunction, and mental problems are

some of the detrimental effects on human health. The health effects can be so severe that they cause mortality; over 7 million people die each year as a result of fine particle interactions in polluted air (SDG-3)

Possible Solutions:

1. Enforcing law to protect public health and strictly maintain that
2. Restrictions on using substances that are dangerous for our health
3. Proper management of industrial wastages
4. Making sure that industrial zone has a safe distance from residential area

2. Industrialization polluting the environment (*conflict with SDG-13*)

Different elements of environment are heavily polluted by different industrial wastage. Several industrial pollutants release to air, soil, water which are directly polluting the environment. The quality of ambient air is affected by the release of various pollutants into the atmosphere. Compounds containing nutrients that might induce eutrophication, such as nitrogen (also known as total nitrogen) and phosphorous, are released into water by industry which are polluting the water. Same goes to soil when industrial wages thrown on soil.

Possible Solution:

1. Adopting new technology, providing effective employee training for safe use, developing better waste disposal equipment
2. In the industries, recycle as much dirty water as possible
3. Consideration of the sites' location and potential impact on the environment can help minimize negative consequences.
4. Regularly assessing the impact of environment

3. Different industrial products like plastics are disrupting the balance of life below water (*conflict with SDG-14*)

With the pace of rapid industrialization to fasten the economic growth, the use of several dangerous industrial products like plastics has significantly increased and several reports show that these heavy uses of plastics are disrupting the balance of life below water. Global resin and fibre output climbed from 2 Mt in 1950 to 380 Mt in 2015, a compound annual

growth rate (CAGR) of 8.4% (table S1), almost 2.5 times the CAGR of global gross domestic product. From 1950 to 2015, a total of 7800 Mt of resins and fibres were made. The majority of this, 3900 Mt, was produced in the last 13 years.

However, Plastic pollution especially micro plastics of the world's oceans is one of the most serious environmental issues of our day. Very little is known about the global distribution of plastic in the Ocean. These microscopic plastic particles persist in the marine ecosystem, where they are mistaken for food by a variety of marine biota, including corals, phytoplankton's, zooplanktons, sea urchins, lobsters, fish, and others, and are eventually carried to higher tropic levels. Micro plastic's influence on marine biota is a cause for concern because it causes entanglement and ingestion, which can be fatal to marine species.

Possible Solution:

1. Reducing the use of single use of plastics as much as possible and making the substitute of plastic more flexible
2. Controlling the noises in the Ocean
3. Recycling the plastics properly
4. Supporting the organization who are fighting against plastic pollution

4. Economic growth may lead to CO2 Emissions (conflict with SDG-13)

The cross-sectional study's empirical findings suggest that there is a link between per capita GDP and per capita carbon dioxide emissions. The relationship is positive, implying that rising per capita GDP causes rising carbon dioxide emissions. Countries' economic growth encourages them to use more energy, which leads to more CO2 emissions, hence pollution is inextricably related to economic growth and development. Economic growth and progress, on the other hand, result in the introduction of new energy-saving and low-carbon technologies that supplant older, more energy- and carbon-intensive technology. So it is a great challenge to reduce the CO2 emissions and bringing economic growth together.

Possible Solutions:

1. Increasing the use of renewable energy

2. Reduce the use of fossil fuels
3. Influencing tree plantation

5. Economic growth causing deforestation which is negatively impacting lives on land (conflict with SDG-15)

Our ever-growing global economy, which demands more than that of our forests can sustain, is a major source of deforestation. As a result, deforestation is occurring at an unsustainable rate. The Scale depicts the physical magnitude of our economy in comparison to the ecology in which it exists. The economy pulls materials from the environment to produce goods, services, and waste. This throughput action is also energy intensive.

On a global scale, Agriculture is responsible for around 80% of deforestation. A large portion of the newly acquired agricultural area is used for cattle ranching and crop production to feed the massive livestock. Palm oil plantations are equally important to this agricultural cause. Mining, infrastructure, urban growth, and wildfires are all proximate drivers of deforestation. Overall, these factors indicate that the majority of forests that vanish do not have an opportunity to regenerate, as the area is being employed for high-throughput operations to support economic growth.

6. Scarcity of useable land (conflict with SDG 15)

Find a usable land would be a possible global crisis despite high economic growth due to using massive land for agriculture, business, residential, research or education purposes. Probably, we lose productive land due to deforestation, high population growth, insecure land tenure, inappropriate land management practice and poverty.

There are some countries who focusing on economy growth on the basis of contributing national GDP for example India, Saudi Arabia, Spain, China and Australia by following sustainable business but at the same time they also be the reason to release more CO2 emission which massively negative impact on land degradation, unproductive land and losing fertility of land. Moreover, increasing population and installing buildings for business and residential purposes may also impact on scarcity of land. Though high

population may have an impact on economic growth, but it may also negatively sign for usable land.

Possible Solution:

First need to practice sustainable use of land for example management of land, water and other environmental resources to meet human need while ensuring long-term sustainable and socio economy, ecosystem services, biodiversity and livelihoods.

There are some steps that may also apply to secure land. USAID declare the rules of sure enough tenure, in which there is a continuum of rights that can be strengthened through a variety of affordable and sustainable approaches. These rules may also include recognition of customary or indigenous right to an area, certificates that secure the rights to use or manage land or resources, a process of community title and formal strategies may also apply like making a title or creating public land restrictions.

Creating public awareness of sustainable land use or effective use of resources could be a positive sign of lessen scarcity of arable land. For example, land is required to construct factories and industries to carry out the production process but how a land can be used effectively to gain more economy will depend on productive use of land.

Source: IMF 2022 growth projections

7. Possibility of losing safe life and healthy environment under the water (Conflict with SDG 14)

According to the United Nations there are some challenges or threats for life below water.

Pollution and Plastics: Million tons of plastics have found below the water every single year which is disrupting marine wildlife. The life of fish has been disrupted by the plastic contamination which may negatively impact human fish consumption.

Overfishing: Overfishing or illegal fishing may also have a negative impact on life below water. It may hamper the healthy environment of fish which can bring curse for marine life.

Climate Change: According to a UN report 93 percent of excess heat comes from greenhouse gas emission. Therefore, the ocean is now getting warmer day by day due to high CO_2 emission which is massively disrupting marine life.

Possible Solution:

There is no alternative way to keep the sea clean and safe to restrain a healthy environment under the water. Sea water has a great impact on climate change and environmental change as well.

To keep the environment healthy and balanced we need to look after how effectively we can save life under the water. For example, we may take individual action to clean and save the ocean life by creating awareness among the people. We may also promote the use of biodegradable plastics instead of using degradable plastics. Moreover, we can also restrict using more toxic chemicals rather than focus on sustainable products which would be the best alternative.

Source: https://www.ubs.com/global/en/ubs-society/our-stories/2019/life-below-water.html

Materiality Assessment (MA) (Methods and Tools)

Materiality:

Materiality relates to identifying and prioritizing the most relevant sustainability topics, considering the effect each topic has on an organization and its stakeholder. (AccountAbility)
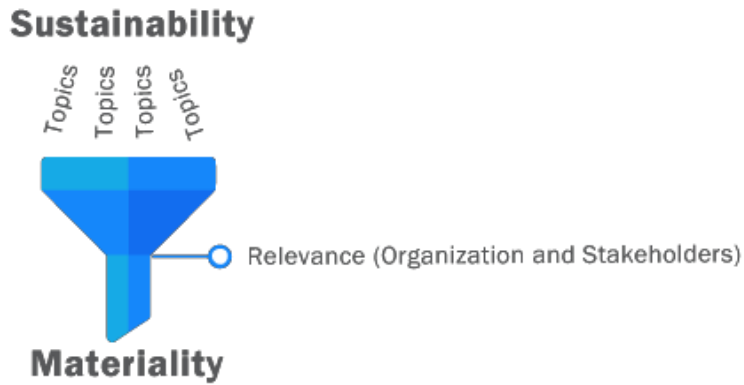
Figure: A simple process of Materiality

Materiality Assessment (MA)

A materiality assessment is designed to help, identify and understand the relative importance of specific ESG (Environmental, Social, and Governance) and sustainability topics to your organization. This involves looking at a variety of factors through two particular lenses: potential impact on your organization and importance to stakeholders.
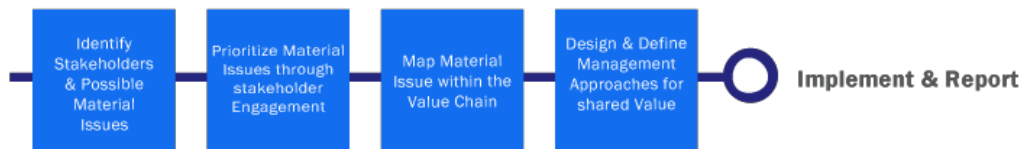
Figure: Roadmap of a general materiality assessment
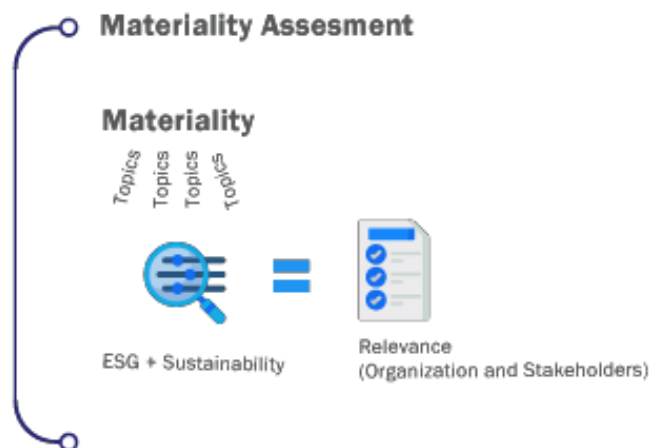
Figure: A simple process of Materiality Assessment

There are different methods and tools to do the Material assessment. Every method defines a different set- and order of steps to structure the MA process. Below different methods and tools are discussed:

Methods

Different methods of MA
Global Reporting Initiative (GRI)
AA1000
International Financial Reporting Standards (IFRS)
The International Framework by the IIRC (IR)
Sustainability Accounting Standards Board (SASB) Standards
BrownFlynn – Getting Materiality Right
Corporate Citizenship – Materiality
KPMG – Essentials of Materiality Assessment
Deloitte
SGS – Materiality Process

Common 14 steps for MA

If we look through all of the different methods of MA then we can find 14 common steps among all of these mentioned methods. These steps keep repeating through all these methods. Below all the 14 steps are mentioned:

Common 14 steps for MA
Define Scope of the assessment
Identify stakeholders
Priorities stakeholders
Define Topics
Define Aspect Boundary
Assess internal significance (significance to company, internal axis)
Assess external significance (external axis)
Priorities topics
Generate Matrix
Define Materiality Threshold
Identify material aspects
Validate Prioritization
Review
Disclose

Tools:

There are different tools that have dedicated MA functionality – functionality which is specifically designed to help in performing a Materiality Assessment.

Categorization of Tools:

The tools are categorized with a functionality type to subdivide the kind of functionality the software entails.

Category 1: Dedicated MA Functionality – Datamaran, MAT, UU, Verego, WeMateriality.

Category 2: MA supportive – Ecovadis, SoFi, Polecat, Quid.

General purpose – Excel, Google search, Google news, Google scholar, LexisNexis, WorldCat.

Method/tool	Datamaran	SoFi	Ecovadis	WeMateriality	Verego	SASB Navigator	MAT
AA1000	0	0	0	1	0	0	0
GRI	1	1	1	1	1	0	0
IIRC	1	1	0	0	1	0	0
IFRS	1	0	0	0	0	0	0
SASB	1	1	1	1	1	1	0

Table: Included methods and tools linked

Empirical Approach for SDG #8 (Iberdrola company)

Iberdrola identifies the material issues for its Stakeholders and for the company itself by preparing its own Materiality Study, conducted with the advice of an independent external firm. Based on its:

- Analysis of the demands of Iberdrola's Stakeholders regarding the company's performance.
- Analysis of the report of companies in the sector.
- Determination of aspects that are important for the fulfillment of Iberdrola's strategy and objectives.
- Study of sector trends and issues in Corporate Social Responsibility.
- Analysis of the requirements of ESG initiatives aimed at investors and sustainability indexes (DJSI, CDP, SASB).

Iberdrola also applies criteria based on the recommendations provided by the GRI Standards of the Global Reporting Initiative (GRI) for its definition of material aspects.

Following the GRI materiality assessment they use 4 Phases materiality assessment: (Using **GRI method** but **hybrid**)

Phase 1: Identification of issues (using the matrix)

Identify:

Focus on matters that may be significant for Iberdrola. Prepared initial list of issues:

General issues they identified:

- Climate change
- Biodiversity
- Availability and management of water
- Circular economy (8)
- Smart grids and supply quality
- Energy transition
- Attraction, Development and Retention of Human Capital (8)
- Vulnerable customers
- Local Communities and Human Rights (8)
- Diversity and equal opportunity (8)
- Customer satisfaction
- Occupational safety and Health (8)
- Responsible supply chain
- Ethics and integrity (anti-corruption and free competition)
- Innovation, Digitization and Cybersecurity
- Transparency and Public policy
- Economical and financial performance

Data Sources: They took their information from different sources. Below listed their external and internal sources of information.

- DJSI
- CNMC
- ILO Standards, etc.

Internal sources:

- Company's Statement of Non-Financial Information
- Sustainability Report for the previous financial year,
- Relevant publications
- Materiality analysis for previous years, etc.

Phase 2: External materiality assessment

The aim of Phase II is to analyze and determine the external relevance of the aspects and issues identified in Phase I, so that the objective of this phase is to determine which of these are material according to the external sources consulted:

- Energy sector companies
- Global sector prescribers
- Investor opinion leaders
- CSR opinion leaders
- Environmental specifiers
- Labour practices specifiers
- Human rights specifiers
- Consumer prescribers
- Regulatory specifiers
- As well as press, social media, etc.

Phase 3: Internal relevance assessment

In this stage company reassessed the information by themselves:

- Statement of Non-Financial Information
- Sustainability Report of the company
- Integrated Report
- Corporate policies
- Corporate websites
- General Shareholders' meeting documents
- And reports to investors.

In addition, the company also has the Global Stakeholder Engagement Model based on the AA1000 Stakeholder Engagement Standard 2015 (AA1000SES, 2015) and incorporates the four requirements (inclusivity, relevance, responsiveness, and impact) of the AA1000 AccountAbility Principles 2018 (AA1000AP, 2018) for analysis.

Phase 4: Issue prioritization **(From matrix)**
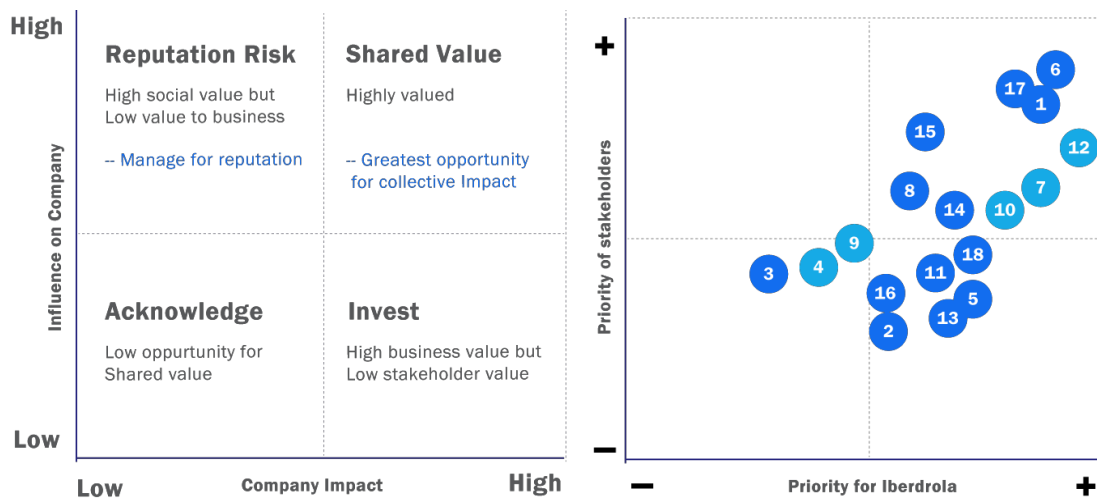
Figure: MA Framework | Figure: Iberdrola MA

Prioritized issue:

- Energy transition
- Climate change
- Economical and financial performance
- Occupational safety and Health
- Attraction, Development and Retention of Human Capital
- Diversity and equal opportunity
- Innovation, Digitization and Cybersecurity
- Vulnerable customers
- Ethics and integrity (anti-corruption and free competition)

How business can contribute practically (Impact oriented Good and Bad practices):

Businesses can contribute to SDG 8 in many ways as businesses play a big role in economic growth. For contributing to SDG 8 businesses can follow the benchmark and measure their performance against the triple bottom line approach. Another approach could be- compare their business action to the other companies. Also, beside that they can follow the mentioned points below:

- Understand the SDGs and link relevant targets to business activities
- Define priorities
- Set the goals
- Integrate
- Innovate and collaborate
- Report and communicate

Good Practices: Below discussed how Businesses can practically contribute to SDG 8 with good practices through impact assessment:

Figure: Impact Assessment (Good practice)

- Sourcing across borders (12,13)
- A flexible workforce / Proper Training or educating (4)
- Gender pay equity plan (5,10)
- Using Circular economy (9,12,13,17)
- Reduction in working hour.
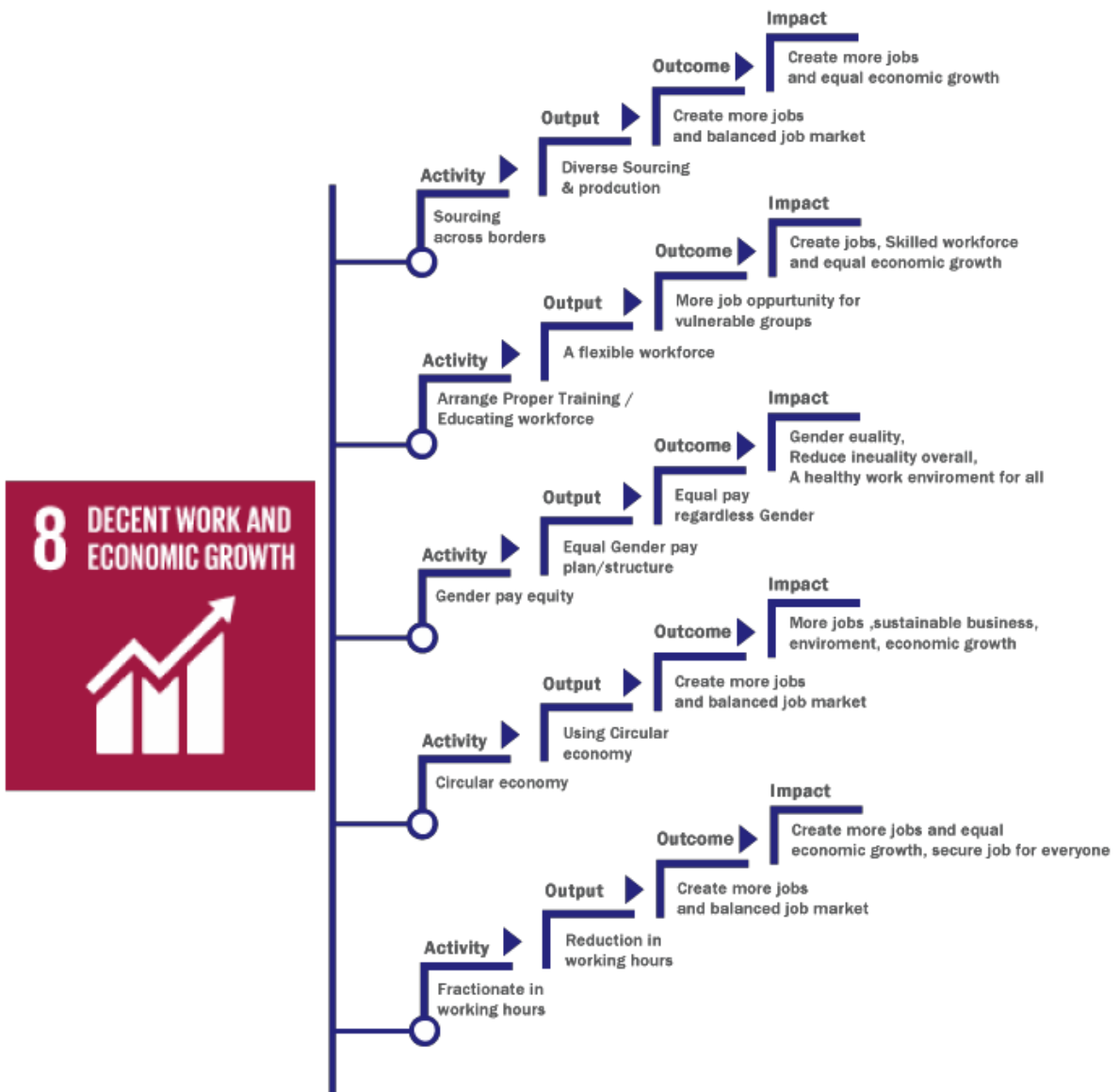
Bad Practices: Below discussed how Businesses can go wrong and may contribute to SDG 8 with bad practices through impact assessment:
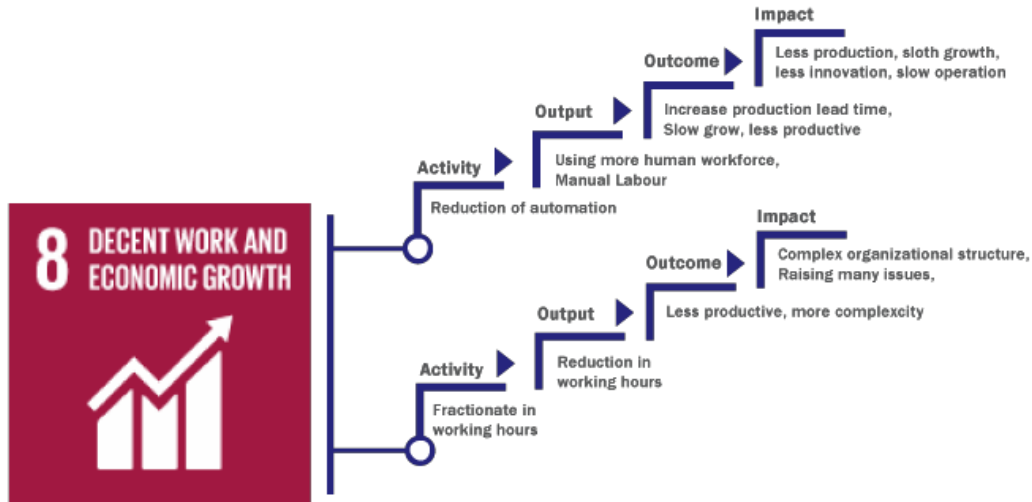
Figure: Impact Assessment (Good practice)

- Reduction of automation.
- Reduction in working hours.

Conclusion:

The world is becoming more competitive day by day. In the world of competition, companies specially in the 3d world country are less focusing on decent work and emphasizing on economic growth we also need to emphasize on decent work and bette work life balance too. According to International Labor Organization, 5.8 percent population of the world are unemployed as of 2017 and the number is increasing with the passage of time. To cope up with the situation, there is no other way than making economic growth faster.

The implementation of one SDG goal is heavily linked with other sdg goals. Sometimes conflict arises between SDG goals. In this project report we tried to show the possible conflicts between SDG-8 and others SDG goals and probable solutions of the conflicts.

We have also tried to show how SDG-8 works, its targets, implementation in business, We have also discussed how a business can asses materiality and the tools needed for materiality assessment, the good and bad practices of SDG-8. So finally at the end of report we would like to say to ensure an balance work life and economic stability, SDG-8 goal implementation is badly needed.

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Anchoring Climate Action

Within the Business

Course Name: Corporate Sustainability Management

Submitted To:

Prof. Dr. Lisa Marie Ranisch

Professor/in Weiden Business School

Submitted by:

Akhtaruzzaman (Speaker)	
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Date of Submission : JULY 17, 2022

1. Introduction

The future of the Earth is in greater peril than ever before as increasing in population and consumption of finite natural resources are causing harm to the planet to the point of no return. Biocapacity, referring to the ability of our planet to regenerate the resources that people are using, is seriously challenged. In present, our ecological footprint shows that we are exploiting natural resources 1.5x higher than the biocapacity of our planet indicating dangerous and unsustainable practices (Toth and Szigeti 2016). As it stands, we will be the architect of our own downfall as our planet stares at the potential dangers arising from climate change. To make a positive change towards a sustainable future, individuals and businesses are now expected to implement socially responsible initiatives to combat environmental and social issues. Majority of the expectations are directed towards corporations as they are the main users of scarce resources and the catalysts of climate change (Przychodzen and Przychodzen 2013). To ensure that businesses maintain socially responsible behaviour for sustainable development, the Corporate Social Responsibility concept was created (Rangan, Chase, and Karim 2015).

2. Sustainable Development

The terms corporate social responsibility and sustainable development are often interlinked when used in the context of business. Corporate Social Responsibility (CSR) is referred to as the practices by businesses that creates positive contribution to society, the overall environment and other stakeholders besides the profitability goal of organizations (McWilliams, Siegel and Wright 2006). Sustainable development can be summarized as the development that takes place to address the demand of the present without sacrificing the future generations and their capability to meet their own demands (Parris and Kates 2003). These two terms are used together because to ensure sustainable development, corporate social responsibility is vital as it encourages businesses to care about matters beyond profit gain.

The needs of the present and the future, in business context, can be categorized into three areas with the Triple Bottom Line (TBL) theory which consists of economic (profit), social (people) and environment (planet) (Fauzi, Svensson, and Rahman 2010). The economic or profit aspect refers to the ability of a business to generate revenue to presently survive in the market and retain profits for future growth opportunities (Jamali 2006). The social part of the theory is concerned with people and their well-being, safety, working conditions which are essential to ensure that

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manpower is available for present, and that human development takes place to meet the demands of the future (Gimenez, Sierra and Rodon 2012). The last piece of the theory, environment, concerns itself with the present and future state of the planet. It promotes practices that can reduce the negative effect on the planet by reducing the rate of natural resource usage and abstaining from environmental pollution (Jamali 2006).

2.1 Sustainable Development Goals

The United Nations (UN) set specific goals for the various aspects of sustainable development which are to be worked on by individuals, businesses, external organisations and even the government. The sustainable development goals (SDG) were developed to provide a clear and concise direction for businesses to follow and set their own individual targets to achieve those goals in the long run.

There are 17 sustainable development goals set by the UN which tackle different environmental, social and economic areas. Economic goals include eradicating poverty, zero hunger, economic growth etc. Social goals which revolve around human development includes goals like quality education, good health and wellbeing, gender equality etc. Environmental goals dominate majority of SDGs such as available and affordable clean energy, responsible consumption and production, climate action etc (Steinbach 2021). All the 17 SDGs by the UN are shown in the figure below.

Figure 1. United Nations Sustainable Development Goals

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3. SDG 13: Climate Action

Besides the development of the SDGs, another significant event that took place was the Paris Agreement in 2015 which largely changed the global efforts for the purpose of sustainability. The main focus of the Paris Agreement was to combat climate change. As the level of carbon dioxide emissions in the air have risen massively in the last few decades, taking necessary measures to fight climate change was heavily emphasized. As such, the objective of preventing climate change directly aligns with SDG 13 which is climate action.

Climate change has been given such high importance because the increase in CO2 emissions and greenhouse gases due to industrialisation and rapid economic growth has led to warming of the Earth's atmosphere. This in turn is resulting in melting of ice glaciers, rising sea levels, extreme weather events like heat waves, droughts, flooding etc which affects the livelihood of millions and puts the future of our planet at risk. The SDG 13 aims to provide solutions to these issues through raising awareness of the dangers of climate change and take proper climate action to combat it. This includes innovation and adoption of technological solutions that reduce the adverse impact on our planet and prevent climate change. It also includes proactive measures to help ensure that the most vulnerable are protected against the impacts of climate change (Doni, Gasperini, and Soares 2020).

3.1 SDG 13: Climate Action Targets

The UN has set five targets for the SDG 13 and 8 indicators across the targets. The targets represent the objectives whereas the indicators refer to the metrics by which the progress of these targets can be measured.

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Table 1. SDG 13 Targets by UN

	Targets
13.1	Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries
13.2	Integrate climate change measures into national policies, strategies and planning
13.3	Improve education, awareness raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
13.4	Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100 billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible
13.5	Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing states, including focusing on women, youth and local and marginalized communities.

(Doni, Gasperini, and Soares 2020)

Based on the targets shown in the above table, it is clear that majority of these targets are expected to be implemented by governments of different nations and other non-profit organizations. However, achieving SDG13 is still considered the responsibility of businesses which is why some of these targets can be achieved by businesses in a different manner.

4. SDG13 and Businesses

The overall SDG13 involves taking climate action to prevent climate change and its adverse effects. As shown in *Table 1*, target 13.1 is about strengthening resilience and adaptive capacity to climate related catastrophes. While most businesses cannot work in areas to address climate disasters, they can take climate actions to prevent disasters from happening in the first place. Target 13.2 involves making measures against climate change as part of national policies. One of the metrics under this target is the total greenhouse gas emissions (Doni, Gasperini, and Soares 2020). Therefore, countries that emphasize on SDG 13 will implement rules and regulations that either

restrict emission rates from businesses and their operations or reward them for reducing their emission rates (Pacheco, Dean, and Payne 2010).

Compliance with SDG 13 and willingness to achieve target 13.3, which aims to raise awareness regarding climate change and ways to mitigate or prevent it, means policymakers expect businesses to partake in the effort as well. Hence, businesses are including awareness raising events and promoting a pro-climate culture amongst its internal stakeholders to take appropriate actions in accordance with SDG 13 and to achieve target 13.3.

Hence, it can be seen that climate action by businesses is not a substitute for climate action done by governments; rather, these measures taken by businesses is mostly complimentary to national policies (Kuramochi et al. 2020).

5. SDG13 Corporate Integration

More and more businesses are becoming interested in SDGs either on their own or as a result of national policies. As such, an important area to discuss what are some of the starting points necessary for corporate integration of SDGs. One of the very first step for integrating SDG is to first explore the different SDGs set by the UN, its targets and indicators. New and small companies generally start at this stage as they try and figure out what each SDG means for their business and how some are more relevant for them than the others (Bloomberg et al. 2017). Other than that, implanting sustainability into the company culture is also often regarded as the starting point for corporate integration of SDGs (Bolsinger, Hoffmann, and Villhauer 2021).

The second phase of corporate integration of SDGs is a further exploration phase whereby businesses need to attain a deep understanding of the risks and opportunities associated with each SDG. Through this exploration and analysis, a firm can gain deeper insights about their business operations beyond what their product and services are to how, when and where they are made. Besides identification of obstacles to corporate integration of SDGs, this phase will also help businesses identify how pursuing of some SDGs can create potential conflict with other SDGs and come up with possible solutions to minimize those conflicts (Bloomberg et al. 2017).

The next stage of corporate integration is to set priorities in terms of the SDGs meaning which SDGs and the different targets should a business work towards? They need to assess whether the business can take on these SDGS while still ensuring survivability of the business through profit

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and growth in the present and future (Bloomberg et al. 2017). In this report, this stage of the corporate integration will be discussed as materiality assessment approach. Based on which SDGs receive higher priority, businesses can start planning on how they can contribute to those SDGs based on impact-oriented corporate sustainability.

Lastly, businesses need to implement measurement and reporting activities to track their performance on the SDGs and also provide proof to stakeholders. Internal KPIs set based on SDGs can be kept confidential within the company but other metrics such as total carbon emissions by the business for a fiscal year, ratio of workers based on genders etc will need to be disclosed which external stakeholders can assess to determine how well the business has performed in terms of meeting certain SDGs (Bloomberg et al. 2017).

6. Tesla's Corporate Integration of SDG13

Tesla is a company that is driven by sustainability. This does not just apply to their products, but it the pursuit of sustainability is the core value of the business and acts as the mission for the company. They made it the core of all their activities and their motivation for business. Sustainability is what is important to al stakeholders of Tesla from its shareholders and employees to its customers. The company's products and services are in the industries of transportation, energy, storage and logistics which are the biggest contributors of pollution and climate change in the United States and worldwide as well. The core identity of Tesla's business is to provide sustainability through their products and services while it provides them with competitive advantage ensuring economic goals are maintained. Tesla addresses climate change throughout their entire business operations as their products are primarily designed with the aim of reducing CO_2 emissions (Tesla 2020). It can be argued that SDG13 climate action and its growing importance in the last 2 decades is what has led to the formation of a company like Tesla.

Therefore, it is evident that Tesla's starting point for corporate integration of SDG13 is the implementation of sustainability into the company's culture, its identity and what it stands for, which is what was suggested by Bloomberg et al. (2017), and creating their products and services (Tesla vehicles) for the purpose of being more environmentally friendly than the alternatives available in the market.

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6.1 Tesla's Materiality Analysis

As mentioned previously, corporate integration of SDGs is done through several phases. One of those phases is where a business has to identify which areas of sustainability and which SDGs can and should they focus on. After that is decided, strategies and action plans to achieve the goals can be made. The process of identifying sustainability issues and sorting them from low to high priority is referred to as the materiality analysis which can be regarded as the foundation of a sustainability strategy. The materiality assessment approach helps businesses identify how the different issues of sustainability affect their stakeholders and what the stakeholders expect them to achieve (Torelli, Balluchi, and Furlotti 2020). In other words, it is very much similar to the stakeholder theory which considers issues that matter to stakeholders rather than just focusing on the needs of the shareholders. By doing so, broader issues such as those outlined by the UN as SDGs come into the picture as well. One of those primary issues that is heavily emphasized by stakeholders is climate change which increases the importance of SDG13 Climate action.

Tesla carried out their materiality analysis in 2021 to identify the key areas of focus in terms of sustainability for them and their stakeholders.

Figure 2. Tesla Materiality Matrix
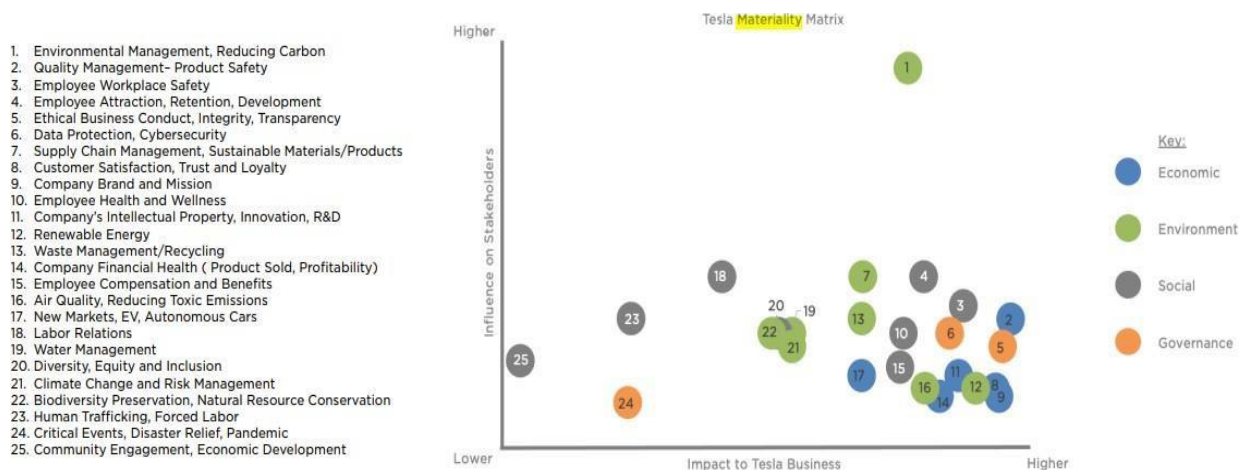
From the materiality matrix, it is evident that economic and governance areas are most impact to Tesla's business which includes product safety and quality (2), customer satisfaction (8), company brand (9) and ethical business conduct (5). However, when looking at the matrix, it can be seen that environmental management and reducing carbon (1) ranks the highest in terms of influence

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on stakeholders. Hence, due to its high influence on stakeholders, climate change continues to be a key area of focus for Tesla making SDG13 Climate Action one of the main goals for the business to address.

6.2 InBev's Corporate Integration of SDG13

Similar to Tesla, Anheuser Busch-InBev (AB InBev) has also successfully integrated sustainable development and its goals across the corporation. However, unlike Tesla whose products are services are created with the purpose of providing better sustainability, AB InBev is a brewing company with its products not directly linked to sustainability. Instead, when referring to SDG13 climate action, the production of their beverages can be regarded as detrimental to the environment because of brewing operations having high energy usage, emission rates and the biggest issue of all which is water consumption (Olajire 2020).

Therefore, AB InBev's integration of sustainable development, especially SDG13, resulted from their realization of the impact of their operations on the climate and the importance of reducing the negative impact. AB InBev has made it their company culture to focus on a bright future through long-term value creation and committed to the SDGs set by the UN Global Compact. As beer beverages are considered a engine for economic growth, its production and distribution is necessary albeit in a sustainable manner (ABInBev 2021).

6.3 AB InBev Materiality Analysis

A materiality analysis was also carried out by AB InBev in 2020 which outlines the areas that are most important to the success of the business and the factors that influence stakeholders

Figure 3. AB InBev Materiality Matrix
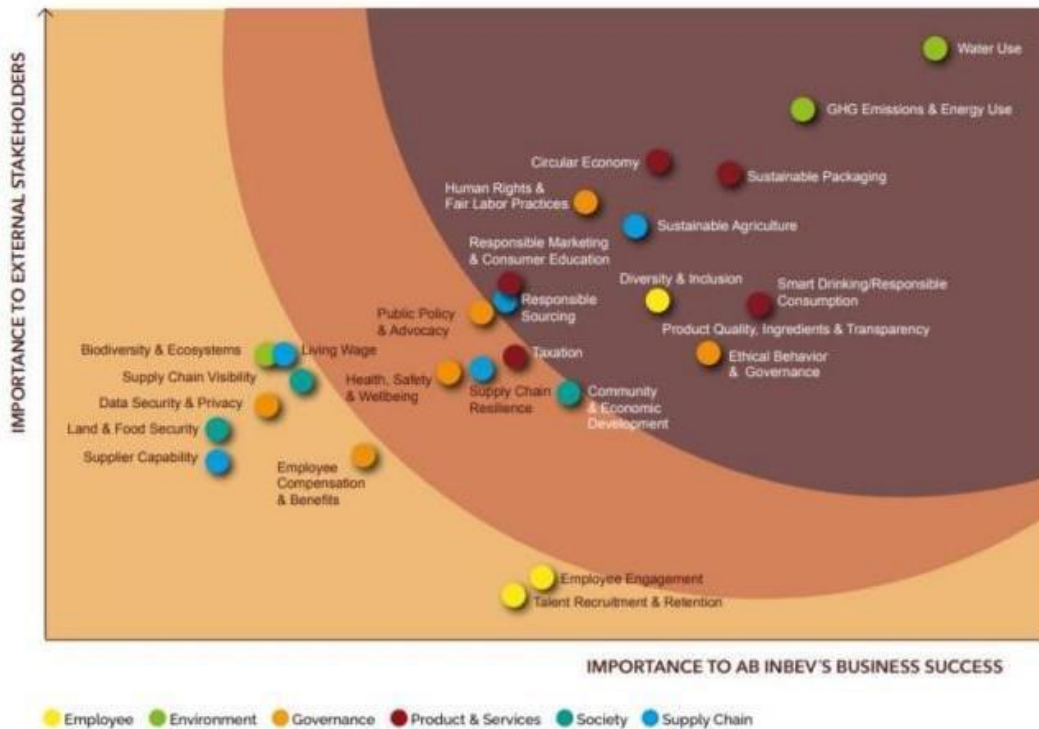
Sourced from : (AB InBev 2020)

The materiality matrix of AB InBev's differs slightly from Tesla's. In the matrix shown above, environmental factors such as water usage, GHG emissions and energy usage are rated high in importance to AB InBev's business success as well as to external stakeholders. This indicates that through materiality assessment, SDG13 Climate action is an integral part of AB InBev's strategies as combating climate change through reduction of emissions and natural resources usage aligns with both economic success and positively influencing stakeholders. Based on this understanding, AB InBev created their environmental strategy which priorities in areas of water stewardship, circular packaging, climate and sustainable agriculture.

7 SDG13 Conflicts

As mentioned before, focusing on certain SDGs can impact other SDGs as they can be interconnected. If a certain action is taken towards achieving one goal, it can complementarily help achieve or hinder other SDGs. Understanding the conflict between the goals is an essential aspect of corporate integration of SDGs and it will allow for businesses to come up with effective solutions to improve progress on their targeted SDGs and reduce the negative impact on other SDGs (UN Global Compact 2018).

Focusing on SDG13 is likely to maximise positive impact on these other SDGs:

On the other hand, it can negatively impact these SDGs:

Compliance with SDG 13 climate actions include measures such as usage of hydroelectric dams and bio-derived energy which requires large areas of land that can lead to displacement of people

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from their homes as well as impact on biodiversity on land which is SDG 15. Displacement of people may also mean displacement of agricultural farms which can negatively impact SDG 2 zerohunger, SDG 8 by reducing decent work and economic growth and SDG 10 by creating more inequalities (UN Global Compact 2018).

This is where impact-oriented corporate sustainability is important which refer to strategies by business that can positively influence as many SDGs as possible and benefit stakeholders while also minimizing negative impact on other SDGs such as economic contribution which is importantto shareholders.

7.1 SDG Transformation space

A) Question 1- Introducing sustainable options and new alternatives, such as green energy like hydrogen fuel, would be extremely expensive to produce or provide services. And that will eventually raise the pricing of commodities. Now our question is – "If we are solely focusing on environmental uplifting, are we neglecting to eradicate zero hunger or no poverty agenda of SDG?"

Hydrogen fuel is revolutionary example in suitable energy. Hydrogen fuel is the cleanest and safest fuel available, since no carbon emissions are produced during the electrochemical reactions that produce hydrogen from hydrogen and oxygen. It is a high-density source of energy that is more energy-efficient than other fossil fuels. It is also much more powerful than other fuels. Hydrogen fuel, like other sources, does not produce noise pollution. For example, electric cars are quieter than other internal combustion engines. Hydrogen fuel cells are more effective than other energy sources since they utilize less fuel while producing more energy. Hydrogen fuel cells are the best choice to obtain sustainable energy and can reduce the usage of fossil fuels, which helps the other countries' economies as well.

There has some challenges as well. The production of hydrogen is not a naturally occurring substance, it must either be extracted from water using electrolysis or separated from fossil fuels, both of which require energy to operate. It is more expensive since the raw materials and the cost of hydrogen extraction are higher. Since hydrogen is more expensive to store and transport than fossil fuels, expenditures associated with hydrogen fuel cells are taken into

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account. Infrastructure for fossil fuels is already in place for hydrogen fuel, but because it has not yet been created, it is more expensive.

The possible solution that we got from our SDG transformation space is an incentive from the government. Someone's idea was that if government stand with this energy and gives incentives to the company to motivate them for using hydrogen fuel then it will be a great initiative for this. The actual user is the consumer. Because something sustainable is not always cheap so consumers should willing to pay more. Like when we go to the grocery shop and buy Bio products because that's something healthy for our environment and health. And the price of bio products is higher than the regular product. So in the case of hydrogen fuel, the consumer has to stand aside with it and be willing to use it whether the price is high or low. Intervene of a developed country to introduce this project to no developing country.

B) Question 2- Implementing new policies like agriculture policies on the basis of environmental need, will bring down the already established industries and also slow down the economic growth. Our question is now: "How do we achieve a balance between maintaining progressive environmental policies while also improving the economic condition of a specific region?"

Benefits of New Policies (by following bio-based agriculture) –

Making the soil fertile for long period of time- Usually when a farmland implements organic fertilizer farming; the first phase of output is less then what a synthetic fertilizer based farmland produces but the overall soil quality remains fertile for centuries.

Maintaining ecological Balance- While synthetic fertilizer and Pesticide is making the best out of the agricultural output, it pushes for ecological imbalance in the long run. Bio based agriculture methods carefully handles this unwanted situation by not hampering the ecological balance.

Reducing the climate Disaster- One of the biggest fear of the century is that the world will be facing a drastic food shortage and it is largely due to overly empathizing on synthetic fertilizer and Pesticide. Sri Lanka tried to counter this challenges by banning all the synthetic fertilizer and Pesticide

Challenges –

Sri Lanka is the prime example of taking the initiative of banning the synthetic fertilizer and Pesticide because it will help the agriculture to sustain in future but while implementing it, it creates challenges such as-

Complete shutdown of existent industries- The large number of employees of various synthetic fertilizer and pesticide companies got shut down within a month which makes existing industries completely shut down after Sri Lanka brought forth banning on synthetic fertilizer and Pesticide. It backfires on fronts like, huge unemployment on agriculture based industries.

Economic Turmoil- Sri Lankan government is facing economic turmoil due to forcing the existing agricultural framework to full on traditional farming which is bio based organic. By doing so, it removes the key players in the agriculture industry and sidelining the huge chunk of low wage earner farmers.

Political unrest due to- To counter to food shortages, Sri Lanka is looking to foreign aids along with expending large amount of reserves on importing basic food items around the world. It dries up the reserve and inflation rises beyond control. The current elected government fled to Dubai and the country is in ruin. The government wanted to uphill the environment and climate challenges but it severely destroyed the economy for long period of time.

Core Contribution By: Akhtaruzzaman &
Tanvir Reza

Suggested Solutions –

Creation of another industry for reduce unemployment- Sri Lanka needs to shift its agriculture based economy to more heavy industries such as producing cars or making fertilizer plant inside its border by not heavily depending on other countries.
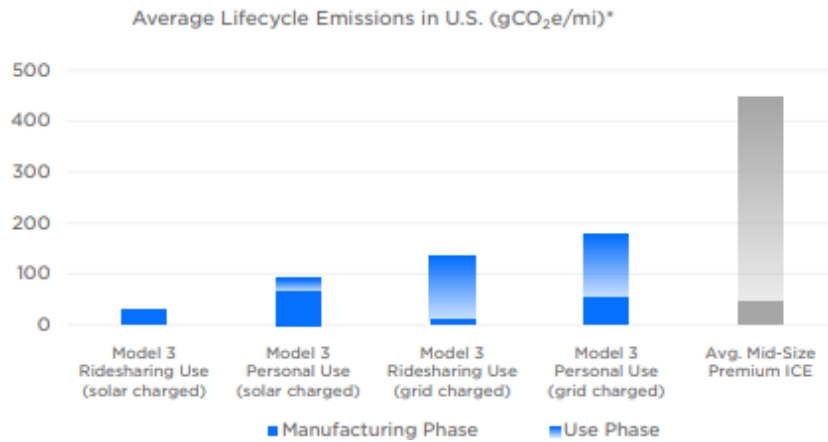
Industry Migration- Sri Lanka has to come up with substitute industry complex around the country so that it can contribute to the economy while the other part of country is lacking. Industry Migration could be a solution to this crisis.

Strong alternative planning before introducing new policies- While forcing the economy to shift into a drastic measure such as 100% organic farming, Sri Lanka should have had a backup plan if the policy backfired. Covid pandemic and subsequently Ukraine Crisis makes the new Sri Lanka agriculture policy obsolete. Careful planning and having alternative options would be preferable for countries who will implement environment friendly policies in future and Having Sri Lanka would be a perfect case study.

7.2 Tesla SDG 13 Contributions

Tesla's contribution towards a greener environment through their electric vehicles, changes in manufacturing methods and other sustainable strategies have been superior to companies within the same industry. On the basis of SDG 13 Climate Action, Tesla takes many impact-oriented sustainability measures. The initial area where Tesla contributes positively is by selling their electric vehicles. The negative aspect of Tesla's products is the process of manufacturing them. For example, manufacturing process of a Tesla Model 3 car results in higher greenhouse gas (GHG) emissions compared to gas engine cars. However, when considering the lifecycle emissionsof an internal combustion engine (ICE) car, they are expected to use up to 450 gCO2e combiningmanufacturing phase and usage phase. Tesla model 3, if used personally and charged on grid, it will have slightly higher emissions in manufacturing phase but significantly lower emissions as the customers use these vehicles long term (Tesla 2020).

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Figure 4. Tesla Model 3 vs ICE vehicle lifecycle emissions

Average Lifecycle Emissions in U.S. (gCO₂e/mi)*

One of the conflicting issues here is that the usage of electric vehicles requires high amounts of electric usage, which in the US, has been mostly sourced from coal. However, in recent years, coal usage is declining as electricity is being taken from renewable sources like wind and solar which makes it more environmentally friendly. The other conflict which is the higher-than-average emissions during manufacturing stage of the vehicles which can impact life on land through climate change is also being addressed by Tesla. In their factories, they are now using fewer robots during production process which reduces energy consumption and emissions. Their commitment towards renewable energy goes even further as Tesla has installed solar panels across the roof of their Gigafactory in Nevada which is expected to grow even further. In 2020 itself, tesla solar panels have produced more energy in one year than they have consumed over the years (Tesla 2020).

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Jenish Rameshbhai Vaghasiya

Figure 5. Energy produced vs Energy used by Tesla

Cumulative Energy Produced by Tesla Solar Panels vs Consumed by Tesla Factories
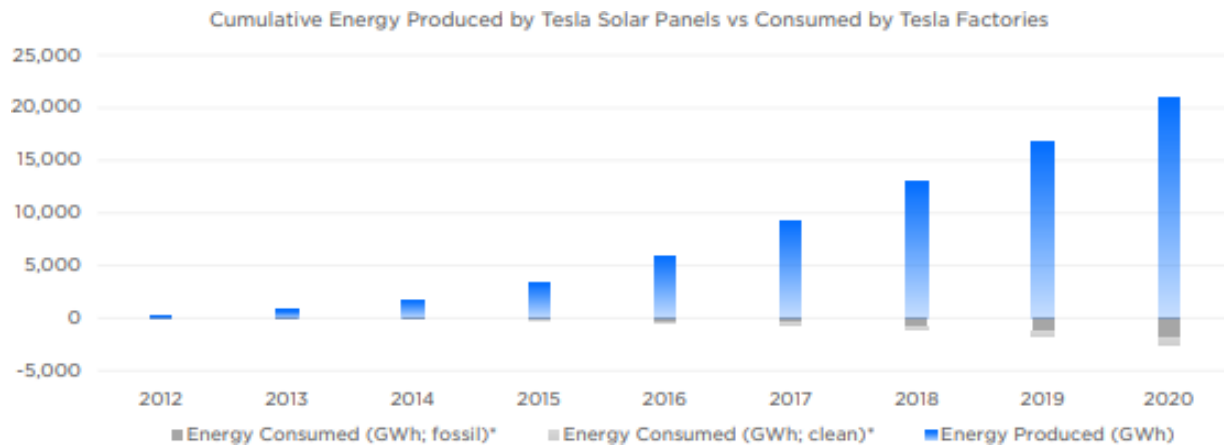
The major conflict of compliance with SDG13 to create environmentally friendly products like electric vehicles is the potential adverse effect on SDG10 which aims to reduce inequality. This mainly occurs because these products tend to be priced significantly higher than the alternatives making it harder to create balance between being proactive towards environmental policies and also improving economic standards of a region. Tesla combats this by pricing their cars almost onpar with their ICE equivalents (Tesla 2020).

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Figure 6. Starting price of Tesla vs ICE cars

Starting Price of Mid-Sized Premium Sedans
(before subsidies or dealer incentives)

Mercedes C-class | BMW 3-Series | Model 3 SR+ | Audi A4

Source: OEM websites
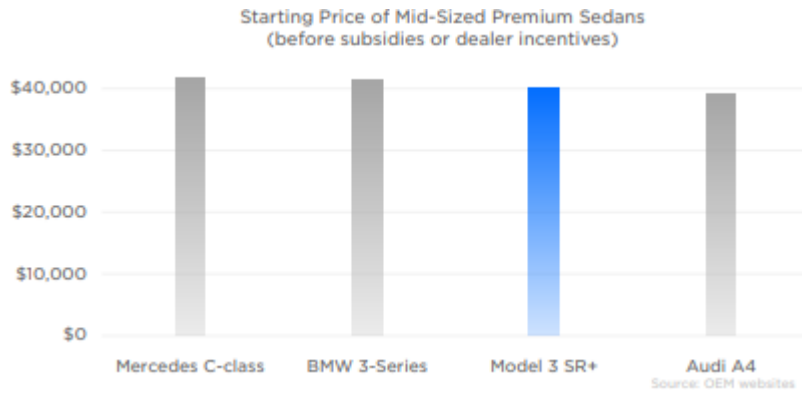
Besides starting price, when considering the cost of owning and using an electric across a longer period like 5 years, the total cost of ownership is similar or significantly lower than Tesla's counterparts (Tesla 2020).

Figure 7. Total cost of ownership of Tesla vs ICE cars

Total Cost of Ownership ($ per mile) - 5 years, 60,000 miles

Model 3 SR+ | Toyota Camry | BMW 3 Series

■ Depreciation, Taxes, Fees, Incentives & Financing ■ Insurance ■ Maintenance, Tires & Repairs ■ Fuel (Electricity or Gasoline)
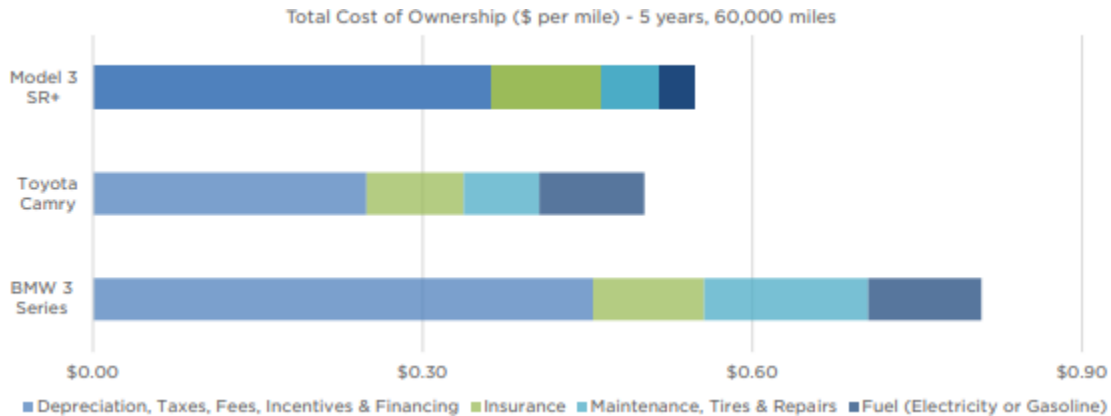
All of these actions taken by Tesla are contributing to SDG 13 in a positive manner whilst ensuring other SDGs like SDG10 are not hindered.

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7.3 Bad practice of Chevron

Chevron is a well-known company it calls human energy company. Mainly it is a long history of causing environmental disaster. In 2019 chevron disclosed emission amounted 697 million tons of carbon-dioxide. In this era we are responsible for this society. Global demand for the energy and stakeholders expectation for lower carbon future are never increase and in this way chevron commitment has never been stronger. Chevron, which calls itself "the human strength corporation," has a long records of inflicting environmental within the backyards of socially deprived communities each in the united states and in different nations: the business enterprise nonetheless has but to easy up the 16 billion gallons of poisonous waste it dumped into the Ecuadorian Amazon rainforest from 1964 to 1990. Instead of addressing its methane pollution, chevron is attempting to absolutely reshape its public presence to hold tempo with the general public's notion of the weather crisis. The corporation still has but to smooth up the sixteen billion gallons of poisonous waste it dumped into the Ecuadorian. Frankly, the most crucial reason to vote towards pay at chevron is due to the fact it's far one among the biggest oil agencies, and has not proven enough commitment to a just energy transition.

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7.4 AB InBev SDG 13 Contributions

Climate change is one of the main issues that AB InBev prioritises solving as previously seen from their materiality matrix. As a beverage company, they are closely linked to the natural environment as their raw materials such as agricultural crops and waters are their main ingredients (ABInBev 2021).

Figure 8. GHG emissions by scope
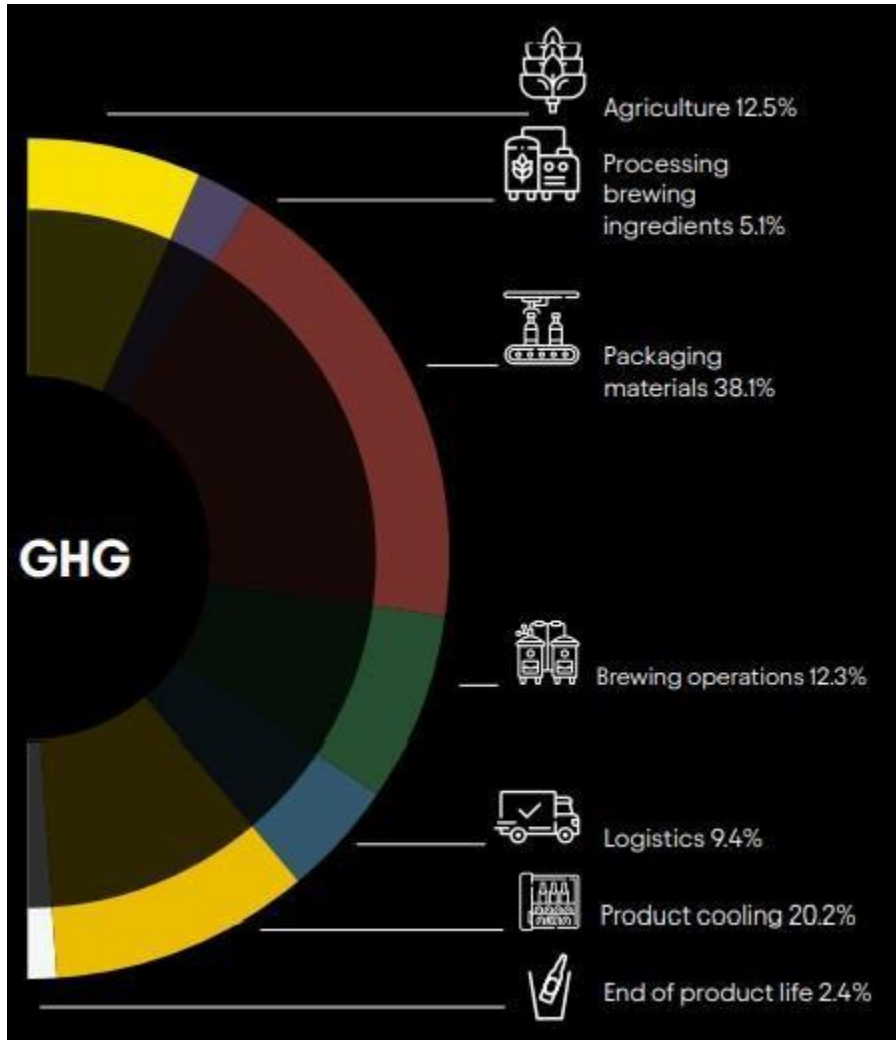
It can be seen that AB InBev's major GHG emissions arise from packaging materials followed by product cooling and agriculture.

Their target is to attain 100% of their electricity requirements from renewable sources and to reduce their carbon emissions by 25% across the entirety of their value chain by 2025. As it stands, through impact-oriented sustainability measures, AB InBev has already managed to reduce their

scope and 2 GHG emissions by 28.63% compared to 2017. However, in 2021, they were only able to reduce scope 1, 2 and 3 emissions per hectolitre by 51.2 kg Co2e/hl compared to 53kg Co2e/hl in 2020. This mainly occurred as a result of the covid pandemic which required longer product cooling and higher emissions from packaging. In their efforts to use 100% renewable energy, the business has begun to use solar power. All seven of their Castle Lite breweries situated in South Africa now run-on solar power. From the beginning of 2021 until August, these breweries generated 9.7GWh of renewable energy which has reduced carbon emissions by 9,443 tons showcasing positive impact-oriented sustainability approach for achieving SDG13 (ABInBev 2021).

Besides focusing on reducing carbon emissions, AB InBev also looks at reducing water usage and encouraging water stewardship as a measure of climate action. As one of the main effects of climate change involves droughts and lack of water access in many regions, AB InBev works on water stewardship to ensure that sustainable source of fresh water is made available to high water-stress areas. This is done through development of a risk assessment tool that uses data attained from external sources to identify the high stress areas. Out of the areas identified, 41 of AB InBev's facilities were close to these high stress areas. Their watershed project has provided significant help to farmers by allowing conservation of agriculture on over 1500 hectares of land (ABInBev 2021).

As packaging materials contribute to the highest GHG emissions by AB InBev, they have taken steps to mitigate that by reducing packaging materials.

Figure 9. Reduction of packaging materials (2018-2021)

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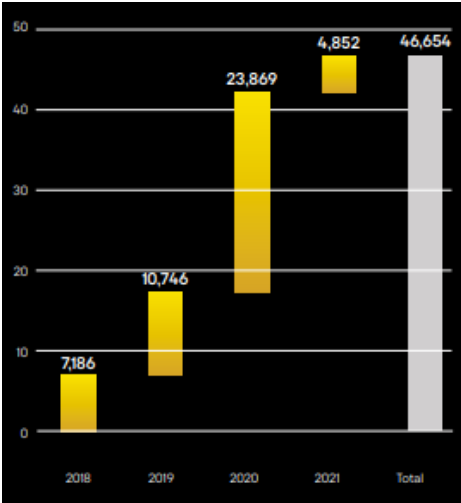
The figure above shows that they were able to steadily improve the reduction of packaging materials until 2021 which was significantly influenced by the covid pandemic. Nonetheless, the business made an impressive 46,654 tons reduction in packaging materials. They have also created the world's lightest longneck bottle for their beers which can reduce the weight from 180g to 150g. This is estimated to cut CO_2 emissions by 17% from each bottle, which if applied to a whole year's demand of bottle production, it can reduce CO_2 emissions equivalent to 40,000 cars (ABInBev 2021).

In accordance with the target 13.3 of SDG13, AB InBev has also taken steps to raise awareness on climate change issues and encourage entrepreneurs to come up with innovative ideas that can reduce plastic from their supply chain to reduce carbon footprint through their "Corona Plastic Free Challenge". They also created an augmented reality experience called the "Plastic reality" which allowed consumers to see the yearly plastic footprint of their homes and encourage them to take climate action by reducing plastic waste (ABInBev 2021).

6. Conclusion

In this report, the concept of sustainable development and the SDGs set by UN Global compact with emphasis on SDG13 Climate Action was discussed. The different targets under SDG13 were also highlighted and which ones are mostly relevant for businesses. Corporate integration of SDG13 was explained with examples of Tesla and AB InBev and their starting points for integration. Conflicts with other SDGs as a result of focusing on SDG13 were explained in the next part. This was followed by analysis of impact-oriented sustainability measures by Tesla and AB InBev for achieving SDG13.

In conclusion, it is clear that the scope of sustainable development is large and consists of many complications such as conflicts between SDGs. However, with proper corporate integration of SDGs and contributing positively to these goals through impact-oriented corporate sustainability can lead to appropriate climate actions required to combat climate change and its adverse effects.

Core Contribution By: Akhtaruzzaman

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ESD for 2030:

SDG TRANSFORMATION SPACE

[Sensibilisieren] [Potentiale Aktivieren] [Chancen Ergreifen]

WS 2022/23

Mögliche Lösungen der identifizierten
Nachhaltigkeitsdilemmata

SDG TRANSFORMATION SPACE

[Sensibilisieren] [Potentiale Aktivieren] [Chancen Ergreifen]

3nd Open Space Meeting

Date: 15. 12. 2022, 10.00 – 14.30
Place: Multifunktionsraum der OTH Amberg-Weiden
Supervisor: Prof. Dr. Laura Denise Fischer
Coach: doc. Dipl.-Ing. Dita Hommerová, Ph.D., MBA

10.00 – 10.15	**Welcome and Registration**
10.15 – 10.25	**Key Information For The Day**

10.25 – 10.50	10.25 – 10.50
How can we satisfy the ever-increasing demand for energy and other resources (transportation, energy, healthcare, sanitation water or housing) caused by ever growing population of sustainable cities? Cogo Badan, Isadora; Noel, Ruhul Amin; Riabova, Iuliia; Yeremenko, Oleksandr; Zunair, Yasir	**According to the UN, SDG 7 is about ensuring access to affordable, reliable, sustainable and modern energy for ALL by 2030 with the emphasis on "leaving nobody behind" (Achim Steiner, Co-Chair of the High-level Dialogue and Administrator of the UN Development Programme). How can that goal be achieved when so far the distribution of financial flows to facilitate access shows that international financial support continues to be concentrated in a few countries and failing to reach many of those most in need?** Brunner, Louis Maxim; Islam, Kazi Sarafat; Islam, Md Nazmul; Osama, Muhammad; Rahman, Muhammad Atiqur; Rozario, Pavel Francis
10.50 – 11.15	10.50 – 11.15
What are ways to assure city's long-term sustainability despite continuous population growth? Cogo Badan, Isadora; Noel, Ruhul Amin; Riabova, Iuliia; Yeremenko, Oleksandr; Zunair, Yasir	**How do you think we can contribute to affordable and clean energy and how can we motivate people to save energy? (SDG 7)** Tereza Halamová, Simona Frýdová, Darina Zatloukalová

11.15 – 11.40 **What happens to the existing energy infrastructure (coal, etc.) after the transition to renewable energies?** Brunner, Louis Maxim; Islam, Kazi Sarafat; Islam, Md Nazmul; Osama, Muhammad; Rahman, Muhammad Atiqur; Rozario, Pavel Francis	11.15 – 11.40 **How to persuade citizens to contribute to CO2 neutrality of cities by growing outdoor plants and watering them from rainwater?** Barbora Janoušková, Jolana Němcová, Filip Polák
11.40 – 12.05 **What is the way to achieve SDG # 7 for a <u>developing</u> country where SDG # 1 and SDG # 2 have priority? This concerns a) the allocation of finances b) overpopulation c) political instability.** Brunner, Louis Maxim; Islam, Kazi Sarafat; Islam, Md Nazmul; Osama, Muhammad; Rahman, Muhammad Atiqur; Rozario, Pavel Francis	11.40 – 12.05 **How could we solve increased housing costs and the availability of "smart cities" for young families?** Kristýna Slivoňová
12.05 – 12.45 Lunch	**12.05 – 12.45 Lunch**
12.45 – 13.10 **How can we provide equal and affordable access to limited resources, such as good healthcare (SDG3), quality education (SDG 4), clean water (SDG 6) or decent work (SDG 8) as well as overcome all Inequalities (SDG 10) for every city-dweller?** Cogo Badan, Isadora; Noel, Ruhul Amin; Riabova, Iuliia; Yeremenko, Oleksandr; Zunair, Yasir	12.45 – 13.10 **What do you think we can do to make cities sustainable and what makes them unsustainable? (SDG 11)** Tereza Halamová, Simona Frýdová, Darina Zatloukalová
13.10 – 13.35 **How can we deal with the problems that are linked to population growth that one can expect in attractive sustainable cities, such as: long queues, overcrowding, interpersonal conflicts, increasing pollution and waste, spread of viruses/infections and higher competition for decent jobs?** Cogo Badan, Isadora; Noel, Ruhul Amin; Riabova, Iuliia; Yeremenko, Oleksandr; Zunair, Yasir	13.10 – 13.35 **How to motivate companies and citizens to sort and recycle waste?** Barbora Janoušková, Jolana Němcová, Filip Polák
13.35 – 13.55 **Biodiversity on land is an important issue for our environment, every year millions of trees are being cut down for preparing food around the world, so will it be possible to reach the goal of Life on Land**	13.35 – 13.55 **What do you think about building solar power plants near cities? What do you think could be the best place for solar power plants?**

(SDG # 15) without achieving the target of SDG # 7? Brunner, Louis Maxim; Islam, Kazi Sarafat; Islam, Md Nazmul; Osama, Muhammad; Rahman, Muhammad Atiqur; Rozario, Pavel Francis	Pavla Martínková, Sára Marečková, Karel Hudec
13.55 – 14.20 **What are the optimal means of transport in sustainable cities and could the full electromobility be a suitable solution?** Anna Radová, Patrik Boháč, Michal Matějka	
14.20 – 14.30 **Closing Ceremony**	

SDG TRANSFORMATION SPACE

ESD for 2030:

[Sensibilisieren] [Potentiale Aktivieren] [Chancen Ergreifen]

Isadora Cogo Badan   December 2022

RESULTS DISCUSSION

How can we satisfy the ever-increasing demand for energy and other resources (transportation, energy, healthcare, sanitation water or housing) caused by ever growing population of sustainable cities?

- The first step would be the understanding and raising of environmental challenges and awareness, as well as changing the society's mindset towards a more sustainable way. For that, the solution lies at the core of the problem, i.e., it starts with the attitude and responsibility of every individual (small actions, big impact!) - combined with other factors:

- Improve resource productivity and energy efficiency, through innovation or implementation of energy technology or processes, supports decoupling between economic growth, environmental damage and resource degradation. → moving toward the concept of smart cities, by starting from reducing costs in waste management to reducing traffic congestion in built-up areas.

- Public transportation has to be affordable for everyone → Increase state/regional/national plans and programs to incentive its use.

- Improve health system efficiency → Virtual care strategies (Telemedicine, telehealth) can be used to fill the need for essential health care services in a variety of specialty areas and across diverse patient populations.

- Support and foster Hospital–community partnerships to build culture of health - so that all stakeholders (communities, hospitals, government), are aware of the real situation of the local health system and can collaborate and communicate in order to have a better healthcare delivery system.

What are ways to assure city's long-term sustainability despite continuous population growth?

- Targeted policy mechanisms to attract private finance to the renewable energy and energy efficiency sectors - in order to ensure that sustainable cities last and will continue to prosper.

- Strategic planning - Small cities sometimes lack a detailed database for planning systems. Master plans are generally prepared by planning authorities to guide the future development of cities; however, the master plan documents lack discussion and vision for future mobility.

- Sustainable buildings designed to be climate resilient, circular, as well as support healthy lifestyle and enable working and living in a 24h economy.

- Avoid/eliminate white elephant buildings and turn them into useful, added-value spaces - either to accommodate families or employees in co-working spaces.

- Not only as shared space, but also as transportation, e.g. car-sharing. Furthermore, encourage public transportation and ensure that the means of transportation are viable and safe for commuting by bicycle, for example.

- A regulatory framework that provides a long-term view with clear targets and milestones, to provide robust signals, reduce uncertainty and establish credibility.

How can we provide equal and affordable access to limited resources, such as good healthcare (SDG3), quality education (SDG 4), clean water (SDG 6) or decent work (SDG 8) as well as overcome all Inequalities (SDG 10) for every city-dweller?

- Provide an affordable, efficient and decentralized healthcare system that reaches universal health coverage within the regions/country → SUS in Brazil: free and universal for everyone, is the largest non-discriminatory government-run public health care system. Ensure, safety, efficiency, patient-centered, timely, equity → through specialized training, been monitored by statistics - measurements, efficient management, Telemedicine

- To ensure quality in education, it is important to train and, most importantly, value the professors and educational staff. Besides the adoption of an adequate teaching platform,

encouragement of student protagonism, development of the student's socioemotional skills. Insertion of technology in the classroom. Improving the educational environment. Government incentives, school-university- companies partnerships, scholarships.

- To ensure and achieve access and good water quality, it is necessary to build a management with correct investments, which contemplate preventive actions for the conservation of water availability and quality, as well as structural measures for water reserve and revitalization of watersheds, prioritizing forest recovery and effluent treatment.

- In addition, it is essential to improve strategies for water reuse and recycling by using containers to collect rainwater, cisterns, or investing in a reuse water filter system are some alternatives that can result in great savings in monthly water usage.

- Decent work: ensure labor rights, promote productive and quality employment, enhance social welfare, and strengthen social dialogue. Thus, it is necessary to establish a trajectory of income and productivity expansion that allows an opportunity for the development activity that may be be less organized in capitalist terms. Only in a context of sustained growth the diversity of policies in benefit of employment and income can be harmonized.

How can we deal with the problems that are linked to population growth that one can expect in attractive sustainable cities, such as: long queues, overcrowding, interpersonal conflicts, increasing pollution and waste, spread of viruses/infections and higher competition for decent jobs?

- Build better infrastructure and digitalization- Up to a point, overcrowding can simply be improved with better infrastructure and management or by implementing digital /e-systems: in supermarkets-electronic cashiers) in stores: virtual shopping.

- Provide better information, allowing people to plan their time schedule to minimise delays.

- Raise environmental awareness to avoid growing pollution and waste - covering the consumption reduction issue. Laws to encourage recycling and proper waste disposal, as well as punishment for inappropriate behaviour → Stricter governmental regulation

- Policies and technologies to add value to waste (for example: if organic waste - use it for biogas plants) → Addressing circular economy concept (CE Action Plan).
- Crowding among diseased people should be avoided, through awareness and hygiene - use of digital infrastructure as an alternative, or masks and social distancing, isolation - as we have experienced.

FUTURE EXPECTATIONS – *To walk the talk*

Integriertes Städtebauliches Entwicklungskonzept für die Stadt Weiden i.d.OPf.

As previously reported in this result feedback, in addition to the learning from our study program, life experience, we are aware that practical experience and partnerships have a great value in terms of learning and contributing to the achievement of our goals – as environmental enthusiasts and future professionals. Therefore, as Master students and residents of the city of Weiden - I believe that we have a "social duty" to somehow contribute to the local community and the *Jugendworkshop* event is here for that matter. An event where the community can share how their ideas could help for the sustainable development of Weiden, on topics such as: climate protection, environment, mobility and leisure. Furthermore, based on OTH's alignment with the vision of Education for Sustainable Development (ESD), the attendance to this event it would be a perfect match to enable students to have the opportunity to get involved with the city and apply the knowledge gained during the courses and the SDG Transformation Space.

Therefore, my future expectations for this work would be to combine the common interests of OTH and Weiden together by moving beyond theory and promoting knowledge transfer into practice while striving for a better and more sustainable future for the city and world.

Klimaschutz in Weiden - 13. Januar 2023 ab 15 Uhr
https://www.weiden.de/wirtschaft/stadtplanung/konzepte-und-rahmenplanungen/laufende-planungen/isek

ISEK Weiden i.d.Opf. – Concept board
https://app.conceptboard.com/board/kdsx-tet4-pdgt-hs6d-om2m

Source: https://www.weiden.de/fileadmin/user_upload/D_Wirtschaft-Planen-Bauen/D07_Stadtplanung/04_laufend_kr/ISEK/2023_01_13_flyer_jugend.pdf

SDG # 7

Name of team member: Kazi Sarafat Islam

1. **Question:** According to the UN, SDG 7 is about ensuring access to affordable, reliable, sustainable and modern energy for ALL by 2030 with the emphasis on "leaving nobody behind" (Achim Steiner, Co-Chair of the High-level Dialogue and Administrator of the UN Development Program). How can that goal be achieved when so far, the distribution of financial flows to facilitate access shows that international financial support continues to be concentrated in a few countries and failing to reach many of those most in need?

   Answer: Some solutions are described below {(ADDRESSING ENERGY'S INTERLINKAGES WITH OTHER SDGs, 2022) and discussion}:

   - Public finance institutions and international donors can play a critical role beyond direct investments in renewable assets, particularly in developing countries, where risks have led to a high cost of financing or limited project implementation.
   - Private investments should also be aligned to create an enabling environment for establishing necessary infrastructure, and mitigate perceived risks to capital flows.
   - Funding has to be used to implement policies that enable just and inclusive energy transitions, such as capacity building, retraining, or implementation of industrial policies, moreover distributing of financial resources effectively.
   - International collaboration should be strengthened to better channel funds to support the energy transition.
   - Have to reduce corruption in the case of energy distribution.
   - Separating the world in the different zones based on their economy and distributing the wealth of the richest country to the needed one as per their status.

2. What happens to the existing energy infrastructure (coal, etc.) after the transition to renewable energies?

   Answer: Some solutions are described below {(Repurposing Coal Infrastructure On The Path To Net Zero, 2022) and discussion}:

   - Converting existing coal plants to produce nuclear energy are already underway in Romania and in China.

- Transforming the coal plant into a "green energy hub with the development of an off-shore wind farm nearby, with turbines potentially being constructed on the site of the old coal plant. Ireland is doing this in their last coal plant.
- Coal infrastructure can be converted into battery energy storage systems. In Western Australia, the state's biggest lithium-ion battery system will be built on the site of the decommissioned Kwinana Power Station in 2022, and used to store excess solar energy generated during the day, which can then be fed into the grid in afternoons and evenings.
- Converting coal mines into solar energy sources. US is converting their Kentucky coal mine directly into a solar energy generating farm for renewable energy projects by the national Environmental Protection Agency.
- Coal plants can also be converted into natural gas and biomass plants. By 2023 the UK will convert the western Europe's largest coal plant, named Drax, into a natural gas and biomass plant.

3. What is the way to achieve SDG # 7 for a developing country where SDG # 1 and SDG # 2 have priority? This concerns a) the allocation of finances b) overpopulation c) political instability.

   Answer: Some solutions are described below {(Advancing SDG 7 in Least Developed Countries, 2020) and discussion}:

   - International public financial flows to developing or least developed countries in support of renewable energy, this is also a target of SDG # 7.
   - Promoting private investments in the affordable and clean energy such as development banks, donors and the private sector for the implementation of priority projects like utility-scale solar PV, hybrid mini-grids, and small hydropower.
   - Supporting innovative partnerships and local innovation including SMEs, entrepreneurs and start-ups has a central role in delivering local technology innovation to address the energy.
   - Encouraging foreign direct investment in affordable and clean energy sector to the developing and least developed countries such as contract signing between Siemens

and United Power in Bangladesh to produce 590 MW electricity in the national power grid.

4. Biodiversity on land is an important issue for our environment, every year millions of trees are being cut down for preparing food around the world, so will it be possible to reach the goal of Life on Land (SDG # 15) without achieving the target of SDG # 7?

Answer: Some solutions are described below {(ADDRESSING ENERGY'S INTERLINKAGES WITH OTHER SDGs, 2022) and discussion}:

- Accelerating the access to clean cooking is necessary to mitigate this problem.
- Scaling up investment in clean cooking is urgently required for the region in Central and Southern Asia, & Eastern and South-eastern Asia as well as in sub-Saharan Africa and Oceania, excluding Australia and New Zealand.
- National governments should speed up the recovery efforts to develop and implement regulatory and financial policies to improve the affordability and adoption of clean cooking for the most vulnerable people.
- Moreover, different clean cooking solutions, a multi-sectoral and coordinated effort across institutions and businesses is needed to build robust measures for solving this issue.

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Advancing SDG 7 in Least Developed Countries, 2020,
https://www.un.org/ohrlls/sites/www.un.org.ohrlls/files/hlpf_policy_brief_advancing_sdg_7_in_ldcs.pdf

Questions and solutions from the discussions I took part:

1. According to the UN, SDG 7 is about ensuring access to affordable, reliable, sustainable and modern energy for ALL by 2030 with the emphasis on "leaving nobody behind" (Achim Steiner, Co-Chair of the High-level Dialogue and Administrator of the UN Development Programme). How can that goal be achieved when so far the distribution of financial flows to facilitate access shows that international financial support continues to be concentrated in a few countries and failing to reach many of those most in need?

   My notes:
   --> Question Meaning: UN says they want to give access to everyone, but so far the money is not allocated fairly! Also financial support number have decreased for a second year in a row.
   Back up facts:

   - international public **financial flows** to developing countries in support of clean energy **decreased** in 2019 for the **second year in a row**, falling to USD 10.9 billion
   - Flows to developing countries in support of clean and renewable energy reached **$14 billion** in 2018
     - a mere **20 percent going to the least-developed countries**, which are the furthest from achieving the various SDG7 targets
   - progress has been **unequal** across regions
     - deficit is particularly concentrated in **Sub-Saharan Africa**, which **accounts for three-quarters of the global deficit**
     - Latin America and the Caribbean, Eastern Asia and Southeastern Asia are approaching **universal access**, with more than **98 percent** of their population having electricity access, whereas in Sub-Saharan Africa **less than half** of the population has access
   - Under current and planned policies and further affected by the COVID-19 crisis, an estimated **660 million** people would still **lack access in 2030**, most of them in Sub-Saharan Africa
   - The 46 least developed countries (LDCs) received a mere 20 percent of public financial flows over the period 2010–18 and a total of $2.8 billion in 2018—the same level as in 2017 but lower than in 2016 and 2015

   --> How do you think the money can be distributed better and why do you think it is not happening?

   Worst practice example:

   - Money continues to be concentrated in certain areas leaving sub-Saharan Africa behind
   - Money is taken away from other developing countries in need

- Financial flows decrease further worsening the situation for all
  Best practice:
- Receive more financial support to compensate Africa equally without making the situation worse for other countries
- More equal distribution to ensure that at least basic needs are covered for all people on earth
- Develop new renewable energy source to can suddenly give access to everyone --> recent developments in fusion of atoms. First time created more energy than consumed --> a lot of potential for the future

  Solutions discussed by group:

  - System to navigate financial flows fairly
    - → equal distribution
  - Rate countries to their current social, economic, governmental, and environmental factors
    - → use it for criteria to allocate flows
  - Address corruption
    - → need to ensure the money is going where it is supposed to go
  - Raise awareness, needs more support
    - Private donations an option
  - Crowd funding to address richest 1%
    - Everyone donates 0.5% or more of their wealth to help with the SDGs
  - UN needs to set a more realistic goal
  - Zone system so countries can help each other

2. What happens to the existing energy infrastructure (coal, etc.) after the transition to renewable energies?

My notes:

- Ideally recycled or upcycled

- Coal mines and oil drilling to be stopped safely and closed down to give natural habitats time to recover again

- Try to reuse parts of the infrastructure for renewable energies

- Workers could transition to the new jobs that will be created through renewable energies

- Try to find new purposes for the heavy machinery and equipment in other industries

Worst practice example:

- Just leaving everything behind without reusing the materials and equipment --> pollution and natrual resource loss

- Not ensuring that people who currently work in this industry have a secure job if its closed down

- Using the equipment to continue drilling in other countries

Best practices:

- Everything is recycled and reused with purpose allowing for a smooth transition

- Peoples livelihoods will be increased as a result of new jobs --> better health and better income and safer jobs

- Use machinery to build infrastructure and fasten the progress of transitioning

Solutions discussed by group:

- Instead of burning coal for example, the facilities could be used to burn waste
- Reuse and upcycle if possible
- Use coal mines to store waste (landfill style)
- Re-purpose as a museum
- Other crazy idea → nightclub, entertainment, etc.
    - Idea is to give it a new purpose
- Check if existing infrastructure is private or public. If private, companies should be responsible for reuse as well

3. How do you think we can contribute to affordable and clean energy and how can we motivate people to save energy? (SDG 7)

What we can do:

- **By doing what we can do individually first of all:**

    o Turning off lights

    o Devices standby mode

    o Completely filling dishwasher before turning on, etc.

- **Installing solar panels and more efficient energy system**

    o Battery, electric heating pump etc.

--> ideally so we can generate all the energy we personally need

- **Study engineering and develop more efficient energy systems**

- **Donate money**

- **Raise awareness**

- **Crowd funding**

Motivate by:

- Education

- Pictures and videos from people in need to influence emotions

- Setting an example by doing steps above

4. What do you think about building solar power plants near cities? What do you think could be the best place for solar power plants?

Generally a very good idea but very dependent on location
   - Needs to make sense to build solar panels
      - Places with a lot of sun --> near equator
      - Australia as an ideal location
         - Did case study on that back then bc they are so engaged with mining and this could be so much better --> they are building more and more but could happen much faster
   a. Could cover deserts with solar panels to large parts?
   b. Solar panels should also be on every house ideally
   c. More advances in solar technology to make them really efficient

5. Question about Increased housing cost & "smart cities" (didn't write down the entire question and the can't access the timetable anymore)

   - Government regulation in form of a price ceiling for energy
   - Government incentives to give households the ability to install solar panels
      - → provide opportunity to transition fast
   - Diversify suppliers

Smart Cities:

   - Crazy project, very futuristic
   - Seems very specific to their location
   - Different viewpoints for potential to success
      - Many questions to be answered but interesting to see that one is being built

6. What makes cities unsustainable (same here with the question..)?
   - Not using public transportation
     - Reduce prices/cost so more people use it
     - Expand networks to access more locations
   - Make flights CO2 neutral by mandatory carbon offsets by passangers
     - If they want to fly somewhere they have to pay for the carbon emissions through offset programs (e.g. afforestation projects)
     - Or flying companies have to take care of that
   - Better access to supermarkets, pharmacies, schools (essential buildings basically)required
     - Increase amount of people who walk/bike
     - More sidewalks & bikepaths
   - Improve environmental education
     - Universities
     - Schools
     - Primary schools?
     - Subject like introduction to environmental education
       - Explaining ecosystems of earth and stuff like that
         - ➔ Idea is to make children enthusiastic about preserving nature
         - ➔ Future generations need to be educated

7. How to bring companies to recycle more?

   - "pfand" system for bottle manufacturers mandatory
   - Create department to recycle own waste
     - Reuse raw material for own production
   - Stricter governmental regulation
   - Public to create demand for companies to become more sustainable
   - Politic party to represent younger generations
     - Age limit 35 and younger for example to represent youth and young adults
     - Prupose to respond to their needs
       - Create value for the future

- Fuel competition between countries for sustainability
  - But like it is with sports
  - Stimulate "friendly competition"
  - Find a way to convince people that the sustainability transformation can be a chance/opportunity instead of weight or "duty"
- To raise environmental awareness
  - Companies have to become 100% transparent with their supply chain
    - Attract customers through strong ESG leadership
      - ➔ Consumers should be able to see where exactly a product comes from, with what impact it has on local communities & environment, and what carbon footprint the product generated
        - Through barcode for example

UNIVERSITY OF WEST BOHEMIA

FAKULTY OF ECONOMICS

Seminar work

SDG Transformation space

Kristýna Slivoňová

Plzeň 2023

Introduction

The seventeen Sustainable Development Goals (SDGs) are presented as the UN development agenda for the next 15 years 2015-2030, building on the successful agenda of the Millennium Development Goals (SDGs). These goals were adopted in September 2015 at the UN Summit under the so-called 2030 Agenda to "Transform Our World: The 2030 Agenda for Sustainable Development".

I took a part in the SDG Transformation Space project on December 15, 2022 at OTH Amberg-Weiden. In the project we focused on two sustainable development goals, on the SDG goal number 7: Affordable and clean energy and goal number 11: Sustainable Cities and Communities. We, were divided in two groups and took part in the discussions, we stated the reasons for choosing particular question or what conflict we identified as part of chosen SDG-goals.

Sustainable Development Goals

The 17 Sustainable Development Goals are presented as the OSN development agenda for the next 15 years (2015-2030) and they are build on the successful agenda of the Millennium Development Goals (MDGs). These goals were accepted in September 2015 at the OSN Summit under the so-called 2030 Agenda to "Transform Our World: The 2030 Agenda for Sustainable Development"(OSN, 2022).

The goals recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

"The new agenda is a promise from political leaders to people around the world. It concerns all countries and is a comprehensive and transitional vision of a better world for all. A plan to eradicate extreme poverty, a blueprint for shared prosperity, peace and partnership that takes into account the urgency of climate change and is based on equal opportunity and respect for rights. Its guiding principle is that we must not forget anyone, including the poorest, the most vulnerable and the marginalised, including people with disabilities," - Mr. Ki Mun (OSN)

Goal 7: Ensure access to affordable, reliable, sustainable and modern energy sources for all

This goal is about ensuring access to clean and affordable energy, which is key to the development of agriculture, business, communications, education, healthcare and transportation. The lack of access to energy obstructs economic and human development. The world continues to advance towards sustainable energy targets. However, the current pace of progress is insufficient to achieve Goal 7 by 2030 because huge disparities in access to modern sustainable energy persist.

Achieving energy and climate goals will require especially in developing countries, continued policy support and a massive mobilization of public and private capital for clean and renewable energy. Rising commodity, energy and shipping prices have increased the cost of producing and transporting solar photovoltaics modules, wind turbines and biofuels worldwide, adding uncertainty to a development trajectory that is already far below Goal 7 ambitions.

Goal 11: Sustainable Cities and Communities

In order to improve the lives of over 1 billion slum dwellers, there is an urgent need to focus on policies for improving health, affordable housing, basic services, sustainable mobility and connectivity. As epicentres of the COVID-19 crisis, many cities have suffered from inadequacy in public health systems, in basic services, a lack of well-developed and integrated public transport systems and inadequate open public spaces, as well as from the economic consequences of lockdowns.

Cities are growing. One hundred years ago, on average, one in five people lived in them, today, more than half of the world's population does. The OSN estimates that by 2050, around seven out of ten people on the planet will live in a city. For those who head there, they hold the promise of change for the better. But as populations grow, it is becoming increasingly difficult for large metropolises in particular to remain truly good places to live. More inhabitants mean more demands on transport and energy, more water consumption and more waste production, for example. To cope with this pressure, cities need to undergo a fundamental transformation. Today, they stand at the beginning of a revolution.

How could we solve increased housing costs and the availability of "smart cities" for young families?

In my question I have combined both of these goals, the first part deals with goal no. 7. The housing costs in the Czech Republic continues to rise and significantly increases headline inflation. According to today's latest data from the Czech Statistical Office, inflation rose to 17.2 percent year-on-year in June. It increased by 1.2 percentage points month-on-month and reached its highest level since 1993. Inflation is the highest in 30 years. Owner-occupied housing has become more expensive compared to last June due to a high 20.1 per cent increase in the cost of building materials, labour and the price of new homes. Prices of apartment rent (up 4.6 per cent year-on-year), water (+5.3 per cent) and sewerage (+6.4 per cent) are also up (CSU, 2022).

Housing costs increased significantly mainly due to the rise in energy prices. The prices of electricity for households rose by 31.6 per cent year-on-year in June, natural gas by 57.8 per cent, solid fuels by 34 per cent and heat and hot water by 18.1 per cent. The price increase was still slightly higher than in the previous May. Therefore, energy costs are taking an increasing share of family budgets, regardless of whether the family owns or rents a home (kurzy.cz, 2022).

Opponents in the debate suggested capping prices, which is already happening in many EU countries. The current unprecedented and enormous rise in the prices of practically all goods and services has caught households and firms exhausted after a two-year coronavirus fast. As a result, many families and businesses no longer have any spare savings, and the rising prices will cause them major problems. This is especially so as the price of basic food and housing is also rising, which is not something on which much can be saved. In addition, the outlook for the future is not very cheerful, as the price rises are unlikely to end. The solution may be to increase salaries in line with inflation.

Second part of the question is focused on smart city, the concept of smart city has spread all over the world over the last few years. To become smart, cities are investing more and more money in modern technological measures. Cities are growing. One hundred years ago, on average, one in five people lived in them; today, more than half of the world's population does. The UN estimates that by 2050, around seven out of ten people on the planet will live in a city. For those who head there, they hold the promise of change for the better. But as populations grow, it is becoming increasingly difficult for large metropolises in particular to remain truly good places to live. More inhabitants mean more demands on transport and energy, more water consumption and more waste production, for example. To cope with this pressure, cities need to undergo a fundamental transformation. Today, they are at the beginning of a revolution (sdgs.un.org, 2023).

I have introduced to my participants a unique project, The Line. This project is an example of a very futuristic and modern concept of smart city. In 2021, Saudi Crown Prince Mohammed bin Salman unveiled plans to build The Line, a smart city that will be built vertically, have no roads or cars, and run purely on renewable energy.

The authors of the project claim that all the necessary services will be just a five-minute walk away in the proposed city. The city will have no roads and therefore no cars, but will boast a high-speed railway that will run from one end to the other, covering the distance 170 km in just 20 minutes. The city should also have a special ventilation system that will create an ideal climate all year round.

The Line is part of Saudi Arabia's $500 billion Neom megaproject being built in Tabuk province. It is a controversial project, as around 20 000 people will have to move to make room for the construction. These people are members of the Huwaitat tribe, an indigenous tribe that lived in the country before the establishment of Saudi Arabia. A number of activists protesting against the Neom project have been kidnapped and imprisoned. This, among other things, prompted Riot Games, which had originally planned to enter into a sponsorship deal with Neom, to call off its plan.

In the discussion, I learned from my opponent from Bangladesh that the biggest problem in urbanization and for the construction of smart cities in Asian countries is legislation, the countries are struggling with corruption and dysfunctional social systems and this is leading to the expansion of slums. The first solution to the problem of accessibility should be to change the legislation and the social system.

Conclusion

So we discussed the affordability of modern smart cities, modern and technologically advanced cities are unaffordable for young families with average salaries. There is a threat of an ever-increasing gap between the classes, so the middle class may gradually disappear. In developing countries, slums are often found around modern cities.

Despite the situation in Europe with energy prices, there are still over 700 million people globally living in the dark and 2.4 billion cooking with harmful and polluting fuels. Although the use of renewable energy and energy efficiency have improved, progress is not fast enough to achieve this sustainable goal number 7.

In the discussion I learned a lot of interesting things about life in other countries, for example, compared to Brazil where my opponent is from, the quality of waste sorting in Europe is really high. In 2022, the global average municipal solid waste collection rate in cities is at 82% and the global average rate of municipal solid waste management in controlled facilities in cities is at 55%. The municipal solid waste collection rates in sub-Saharan Africa and Oceania are less than 60%. Uncollected waste is the source of plastic pollution, greenhouse gas emissions and incubation for infections.

All participants had good discussions on the issues at stake, they helped me to see the issues in a different light.

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UNIVERSITY OF WEST BOHEMIA IN PILSEN

FACULTY OF ECONOMICS

Semester work from subject KPO/MPRO

Project SDG Transformation SPACE

Pilsen 2022/2023

Tereza Halamová (K22N0138P)

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Introduction

This work deals with the summary of knowledge and information that we obtained in the framework of the Czech-German workshop within the SDG Transformation SPACE project from the students at the partner school of the University of West Bohemia OTH Amberg-Weiden.

The Sustainable Development Goals were set by the United Nations and represent a development program for the next 15 years. This year we focused on goals No.7 Sustainable and clean energy and No.11 Sustainable cities and communities.

Our questions are:

SDG 7: How do you think we can contribute to affordable and clean energy and how can we motivate people to save energy?
SDG 11: What do you think we can do to make cities sustainable and what makes them unsustainable?

Sustainable Development Goal 7 - Sustainable and clean energy

= Ensure access to affordable, reliable, sustainable and modern energy for all

How do you think we can contribute to affordable and clean energy and how can we motivate people to save energy?

Over 10 % (7,8 billion people) of the world's population live without electricity and a further billion are connected to unreliable and unstable power networks. Today 2,4 billion people cook using open fires or inefficient stoves fuelled by kerosene, biomass and coal, which generates harmful household air pollution. This represents 40 % of the population of the world.

This creates serious problems both for human beings and for the environment. The UN reckons that four million premature deaths result as a consequence of air pollution derived from the burning of biomass for cooking and heating.

What can we do to achieve SDG 7?

Most people care about their future and the future of their children. It may not always be clear to them what is at stake with their energy consumption. Turning **off the lights** when you are not in the room, or switching to more energy-efficient light bulbs, for example, or not running water when brushing your teeth or washing your head, for example. All of these are small, but significant steps that save energy, the planet and the environment, and the future of our children. We can also save on electricity bills.

Behaviors such as **using bicycles** over other fossil fuel vehicles to travel short distances or switching to **electric vehicles** instead of traditional cars can be very significant for the planet. Furthermore, the creation of cycle paths in larger cities or between smaller cities. The option of shared bikes or scooters is also one of the options.

We can also switch from traditional energy sources to **solar or wind energy**. Install solar water heaters and solar lights. They reduce your carbon footprint and can save you money on your electricity bill.

The most important thing is to **educate and raise awareness** about energy savings and consumption. We should teach the next generation about the importance of energy resources and how to use them efficiently.

Sustainable Development Goal 11 - Sustainable cities and communities

= Make cities and human settlements inclusive, safe, resilient and sustainable

What do you think we can do to make cities sustainable and what makes them unsustainable?

Cities consume more than two-thirds of total energy consumption and produce more than 70% of CO2 emissions. The main reason is above all the heating and cooling of buildings, which produces on average almost 40% of all emissions and represents 35% to 60% of total energy needs.

What can we do to achieve SDG 7?

As the first, we would definitely recommend **solving the issue of sustainability** already **in schools**, so that students have a concept and an overview of this issue and are aware of the consequences that could arise in the future. Thus, student education is an important starting point for the future of sustainable cities.

If we consider the tools we can use in the present, it is important to think about **reducing carbon emissions** when building and expanding cities. Cities should strive for the fastest possible transition to more energy and climate efficient buildings.

Our other recommendation, which resulted from the SDG workshop in Germany, is the recommendation and motivation of people to try to **stop wasting food** and possibly process these residues in a way that does not burden the environment (use bio-waste).

The modern trend of **Zero Waste** is also closely related to people's households. It's a way of thinking, for some it's a **lifestyle with minimal waste production**. In other words, don't buy bakery products and fruit or vegetables in single-use plastic bags, but instead have your own reusable bag. Use your own shopping bags, visit packaging-free stores where the customer weighs loose ingredients and takes them away, for example, in jars or other containers. In short, the reduction of unnecessary packaging.

Transport is a major contributor to the burden on the environment. This problem would be solved by a more extensive infrastructure between large cities in the form of **more frequent bus services**, trains, etc., which people from the countryside could use and would not have to drive emission-producing cars.

Another option to reduce the use of cars with internal combustion engines for transport is the **use of electric cars**, bicycles, scooters or walking. Many people do not use cycling in cities because it is dangerous, so it would be good to build **cycle paths** to make cycling safer. Another possibility is the establishment of so-called **"shared bikes"**, which people can use for transportation in cities. In Pilsen, such an option exists, but it is not so well known.

In conclusion, we would recommend the option of **solar panels** on your own home. Although we know what the situation is these days, everything is becoming more expensive, inflation is higher than in previous years and the quality of food is decreasing, so solar panels also belong to this topic. In order for residents to really be able to afford to have solar panels on their homes, we think subsidies could help make this option more accessible to people.

Although this is a topic of the future and it is also not so much about the people as about the government and its motivation of people to make the world and something more sustainable.

SDG Transformation Space 2022 – Weiden

Radová Anna, Matějka Michal, Boháč Patrik

What are the optimal means of transport in sustainable cities and could the full electromobility be a suitable solution?

There was a big group discussion regarding this question that led into other sub-questions that are corresponding with the topic.

At first we discussed all the possible means of transport in the city – cars, motorbikes, scooters, e-bikes, normal bikes, skates etc. We agreed on pros and cons of every mean of transport and bikes came as the best solution for the city. Of course, not every time it is possible to take a bike, sometimes you have to use car, for example when you have to carry a lot of bags or need to do shopping after the job. In that case it would be suitable to use any kind of electric, or ideally shared car.

After that the discussion turned over to electromobility and question whether its suitable solution for people. In the general point of view it is necessary to compare the whole process of manufacturing electric car with the petrol car. Next it would be wise to keep in mind maintenance costs and ecological footprint. After this detailed comparison is created, then we can say what is more economically friendly. Batteries are also another confusion for people when comparing these two different kinds of transport.

Another fact is that our electrical network is not prepared for higher load than exists right now. In the case every family came home after work and their hobbies and want to charge their car all at once would mean death to our electricity network. That needs to be considered also when comparing petrol and electric transportation.

One of the students suggested checking out the company "CANOO" which focuses on creating modular electric cars, that would be very cheap to manufacture as well as surely more economically friendly. Advantage of their approach is the modularity of their cars, that would lead to cheaper price thanks to same manufacturing process. That might be big player in car industry in big cities in the future.

Major disadvantage of the electric car we agreed to be suitability for plenty of environments. For example, try to imagine electric car working in sub-polar climate. The cold temperatures negatively influence car battery life as well as overall performance. The same would apply to very hot environments. Next disadvantage would be the distance between cities for example in Russia. It is so sparsely distributed that electric cars would have to be able to travel hundreds of kilometers at least. This topic leads to battery question.

As one of the opportunities for reducing number of cars in cities would be car sharing. Some of those programs already exists but only in small scale. Bigger support of this idea might save a lot of CO2s etc. Another viable option would be some service providing platform for car rental. If the person wouldn't use his car, he would be able to rent it. So maybe that would get rid of our favorite "holiday" drivers that are both disturbing and dangerous on the roads.

Long discussion was held around the topic of batteries. They have come a long way, but still they are not prepared to serve as an ideal solution. The innovation in batteries is often held back by big companies that manufacture older types of batteries and would loose so much money if some breakthrough was discovered in this industry. Batteries are still expensive, and they still need to get better to be able to serve well in transportation. There was many companies that tried to solve the short range of electric cars by making the batteries transferable. That would lead to even bigger consumption and manufacturing of batteries, bigger impact on nature etc. So, we agreed that it wouldn't be ideal solution, at least nowadays. In the case the batteries would be fully recyclable, maybe then this solution would be meaningful.

Slight issue is also the charging speed of the batteries. Luckily, that has evolved highly in last decade. The speed of charging has more than quadrupled, leading in extreme cases to hundreds of watts of electricity being transferred into the car's batteries. This made the cars charging times a lot faster, so it is not as big problem as once was.

Next disturbing difficulty is the network of chargers for the electric cars. Luckily, in many modern countries, the network is getting more and more dense. Fast chargers are being added to every major road and shopping center. But there are still many countries that does not have such charger network. In this case you are pretty much dependent on charging, so you wouldn't be able to travel to such countries. Sad fact is that not all chargers are labeled as "fast charger" so it also takes a lot more time than on better chargers. That is also fact to be considered when balancing on the edge of electromobility question.

More generally, back to the transportation in cities, we concluded that public transport is the way to go. It is the most efficient mean of engine transport, as it carries so many people at once. Trams, trains, undergrounds, trolleys, and buses are key in every city. One way of boosting this idea would be some financial grant for companies that operate those vehicles. In case of them being in the care of the specific city or country, it would be great idea to make it as cheap as possible, so as many people as possible use it. There would be very big change on negative impact on the nature. Most of the public transport uses electricity and is directly connected to electricity network. That means no additional CO2 and gases while operating. Negative aspect comes to the electricity consumption, where again rises the question of how the electricity is produced.

Our idea was for example not paying for parking when you have electric car. That would maybe attract more people to buy such vehicle and use it for the city purposes.

The issue is that in many highly populated cities so many cars are driving with only one person in it – the driver! Average distance travelled in those cars is just few dozen kilometers. There are so many cars that families own sometimes 2 or 3 cars. That leads to overcrowding of cars on roads and problems related to that. Traffic jams, accidents and other. Any way to get rid of at least part of the cars would be very beneficial for the cities and the people in them at the same time.

Conclusion was that full electromobility is MAYBE thing of far future, because we are not yet prepared to make this happen. At the same time, we don't even know if it is more economically friendly than petrol cars. We think that in next few years, there are going to be all kinds of cars coexisting at the same time. Maybe in the future it will turn out for one specific type more, but there are so many options. Hydrogen cars are being tested, electricity, gas, petrol etc. We will see what inventions people will create and where this industry will get to. Now it is hard to tell which type is the best. Regarding cities, people should walk more, use bikes, and use public transport as much as possible. Reduce the number of the cars in big and overpopulated cities and lower the negative impact on the environment.

03   January   2023

The Professor

Laura Denise Fischer

Department of MA- International Management and Sustainability.

OTH Amberg-Weiden

Subject: Letter of acknowledgement.

Dear Madam,

At first I would like to thank you for arranging such a wonderful program which was named **SDG Transformation Space.** It was a great idea to learn co-operative discussion, merge knowledge, and introduce new culture and most importantly globalization. We have enjoyed a lot while we were sharing our knowledge and views. It was an opportunity to meet new people and getting new friends. Not only we found the solutions of our SDG related questions we also knew about different countries governance system, education system, local peoples thinking and culture etc.

I am thanking you again and hoping that this program will be continued also for all the future students.

Below here I have added the probable solutions of our questions related to SDG 7 and SDG 11 which we discussed in SDG Transformation Space.

With regards

Muhammad Atiqur Rahman

MA International Management and Sustainability

OTH Amberg-Weiden

Time of Discussion (10.25 – 10.50)

Question- 1. *According to the UN, SDG 7 is about ensuring access to affordable, reliable, sustainable and modern energy for ALL by 2030 with the emphasis on "leaving nobody behind" (Achim Steiner, Co-Chair of the High-level Dialogue and Administrator of the UN Development Program). How can that goal be achieved when so far the distribution of financial flows to facilitate access shows that international financial support continues to be concentrated in a few countries and failing to reach many of those most in need?*

Possible Solutions:

a) **Countries should be divided into different classes according to their economy, location, technological ability and population. Specially dividing into different zone.**
b) **Need to allocate the finance into different country according to their class.**
c) **Providing loan with low interest rate.**
d) **Government should control the irrelevant investment of their own country.**
e) **Providing International co-operation.**
f) **Government should give pressure to the company.**
g)

Time of Discussion (10.50 – 11.15)

Question 2. *How do you think we can contribute to affordable and clean energy and how can we motivate people to save energy? (SDG 7)*

Possible Solutions:

a. **Establishing a rule to add energy meter with all electronic devices where everyone can see how much energy they are using per second.**
b. **Creating awareness from the elementary school adding a chapter on sustainable word.**
c. **NGOs can provide loan for sustainable energy with low interest installment system.**
d. **Promotion.**
e. **Providing scholarship or free education on Sustainability.**
f. **Building moral and ethical mentality/ moral habits from the family level.**

Time of Discussion (11.15 – 11.40)

Question 3. *What happens to the existing energy infrastructure (coal, etc.) after the transition to renewable energies?*

Possible Solutions:

a. **Changing the elements by renewable elements.**

b. **Research and Development to find out the alternative use of those old plants.**
c. **Creating museum by the old machineries and plants.**
d. **Modifying the old machineries and factories into different industry.**

Discussion Time: (11.40 – 12.05)

Question 4. *What is the way to achieve SDG # 7 for a developing country where SDG # 1 and SDG # 2 have priority? This concerns a) the allocation of finances b) overpopulation c) political instability.*

Possible Solutions:

a. **Inventing cheaper and more efficient equipment.**
b. **Donating/ investing to the under developed countries by the developed countries who are already capable of achieving the goal.**
c. **Rebating tax for using the renewable energy.**
d. **Establishing skill based education system (Practical, not theoretical).**
e. **Creating awareness from the primary level.**
f. **Decentralization of Governance.**

Discussion Time: (12.45 – 13.10)

Question 5: *How can we deal with the problems that are linked to population growth that one can expect in attractive sustainable cities, such as: long queues, overcrowding, interpersonal conflicts, increasing pollution and waste, spread of viruses/infections and higher competition for decent jobs?*

Possible Solutions:

a. **Decentralizing of Governance (Every city will have their own authority to take decision and investment). Germany already practicing it.**
b. **Establishing one city one university rule. (Don't put all universities into one city).**
c. **Involving universities before taking any decision/ collecting the research result before doing any new project. (Some countries do not care about it.)**
d. **Introducing digital Governance.**
e. **Introducing Tele-medicine system.**

Discussion Time: (13.10 – 13.35)

Question 6: *Biodiversity on land is an important issue for our environment, every year millions of trees are being cut down for preparing food around the world, so will it be possible to reach the goal of Life on Land (SDG # 15) without achieving the target of SDG # 7?*

Possible Solutions:

    a. **Focusing on renewable energy.**
    b. **Establishing energy saving technology in our daily life.**
    c. **Pre-plantation: Creating artificial forest estimating how many trees we need after 20-30 years. For this plan we need enough land.**
    d. **Controlling population growth and density.**
    e. **Establishing E-mobility.**

ESD for 2030:

SDG TRANSFORMATION SPACE

[Sensibilisieren] [Potentiale Aktivieren] [Chancen Ergreifen]

Course: International Management & Sustainability

Supervisor: Prof. Dr. Laura Denise Fischer

Coach: doc. Dipl.-Ing. Dita Hommerová, Ph.D., MBA

Submitted by: Muhammad Osama.

Following are the questions & possible solutions that I participated in during a discussion in **SDG Transformation Space.**

Q1: According to the UN, SDG 7 is about ensuring access to affordable, reliable, sustainable, and modern energy for ALL by 2030 with the emphasis on "leaving nobody behind" (Achim Steiner, Co-Chair of the High-level Dialogue and Administrator of the UN Development Programme). How can that goal be achieved when so far, the distribution of financial flows to facilitate access shows that international financial support continues to be concentrated in a few countries and failing to reach many of those most in need?

- Countries should be divided into zones so that the countries which are rich in their zone can support other countries (which are not financially established or like developing countries) in order to ensure access to affordable, reliable, sustainable & modern energy.
- UN should also start awareness programs, especially in developing countries so that they can move to renewable resources because some of the countries like Pakistan are not well aware of the challenges that we will face due to climate change (Global warming).
- UN should track their financial support so that they can make sure that their donations are going on the right track because the major challenge that they are facing is corruption.
- Every country must get an equal distribution of financial support from the UN based on their contribution to the ecological, environmental & social factors.

Q2: What happens to the existing energy infrastructure (coal, etc.) after the transition to renewable energies?

- We can convert those coal plants into other things like solar energy generating farm just like Qatar use containers to build stadium974.
- We can use existing energy infrastructure for waste burning instead of burning coal.

- We can also convert it into a museum so 200-300 years later we can share information that how we used to create energy by using coal etc.
- Government or private companies can also do auctions for their powerplant machinery that can be used to build or generate other things like I mentioned above burning waste etc.

Q3: What is the way to achieve SDG # 7 for a developing country where SDG # 1 and SDG # 2 have priority? This concerns a) the allocation of finances b) overpopulation c) political instability.

- Developing countries could encourage developed countries to invest in clean and affordable energy like hydro plants to minimize global warming but they must gain the trust by showing them step-by-step implementation to make sure that developed countries investments would be utilized properly.
- Developing countries governments can also reduce taxes on those companies who are investing in renewable resources in order to access clean and affordable energy.
- These countries should also make sure political stability so that they can get investment from multinational companies for example United power and Siemens signed a contract in Bangladesh to produce 590 MW of electricity in the national power grid.

Q4: How do you think we can contribute to affordable and clean energy and how can we motivate people to save energy? (SDG 7)

- We should increase solar energy usage and also encourage ourselves to use innovative lights in our houses that consume less energy.
- Government should create awareness from an initial level like they should put topics related to sustainability in their school textbooks so that when citizens become adults, they would aware, motivated, and contribute to saving energy.
- Government should also offer scholarship programs to study sustainability courses so people will become more aware of the importance of energy.
- Government can also offer their citizens subsidies in tax deductions like 10 % if they consume less energy so that they can encourage them to use solar panels etc.

Q5: How can we deal with the problems that are linked to population growth that one can expect in attractive sustainable cities, such as: long queues, overcrowding, interpersonal conflicts, increasing pollution and waste, spread of viruses/infections and higher competition for decent jobs?

· We could introduce Tele medicines system so that we can reduce the spread of viruses/infections, especially in the healthcare sector. Healthcare providers can diagnose and treat patients without the need for an in-person visit.
· We should encourage more digitalization so that they reduce long queues for example in Pakistan citizens can apply online for computerized national identity cards.
· Government should collaborate with communities and companies to offer skill-based courses so that citizens can easily secure after completing their studies.

References:

Q No-1: According to the UN, SDG 7 is about ensuring access to affordable, reliable, sustainable and modern energy for ALL by 2030 with the emphasis on "leaving nobody behind" (Achim Steiner, Co-Chair of the High-level Dialogue and Administrator of the UN Development Programme). How can that goal be achieved when so far, the distribution of financial flows to facilitate access shows that international financial support continues to be concentrated in a few countries and failing to reach many of those most in need?

Solutions:

According to this question, our several group members has discussed and expressed their own view to solve this question.

By the achieving this goal we can take some steps for continuing financial support. For example:

1.<u>loan from international organization</u>: I think this is a good step to search international financial organizations for future financial need.

2.<u>Fund allocation</u>: UN divide money for developing or under developing countries for achieving SDGs goal. Any country uses this money as per as their requirements to full fill SDGs 7.

3. <u>Divide different zone</u>: UN can divide countries based on economic condition. Then it would be easier to provide financial support.

4. <u>Bilateral relation</u>: Any country can improve bilateral relation with others country for getting related help

Arguments:

<u>Corruption and poor infrastructure:</u> Some members also argued of these solutions. They think corruption and infrastructure can become a big issue for achieving this target. They suggested that it is needed to decrease corruption and improve infrastructure for getting better result.

<u>Carbon emission:</u> This is a common criticism against develop countries like they are producing more carbon than poor countries. So, meet this challenge carbon emission tax can be the good solution against develop countries.

Q No-2: How do you think we can contribute to affordable and clean energy and how can we motivate people to save energy? (SDG 7)

According to this question, we have found some way to motivate people.

For example: 1. Make concern about using energy.

2. Make social awareness.

3. Add topic in text book about necessary of saving energy.

4. Public awareness program.

5. Family education.

6. Digital meter system.

7. Arrange stage program for showing future effect.

8. Tax reduction offer by government (who maintain energy saving criteria).

9. Use digital light.

10. Environmental education.

Q No-3: What happens to the existing energy infrastructure (coal, etc.) after the transition to renewable energies?

This is a major concern about existing infrastructure when it will be replaced by new energy infrastructure. We have found some solution.
for example:
 1. Recycling method: We can use recycling method for old infrastructure and use it again in the related field.

2.Create Museum: It can be a good solution to create museum of these important infrastructure.

3. Sell other related company: important equipment's ca be sold to others related company. However, it is a good way to get financial benefits.

4. Modification of current equipment's: We can use current equipment's by important and necessary modification.

Q No-4: What is the way to achieve SDG # 7 for a developing country where SDG # 1 and SDG # 2 have priority? This concerns a) the allocation of finances b) overpopulation c) political instability.

It is true that most of developing and under develop countries always concentrate first SDGs-1 and SDGs-2. Even government has provided incentive in their budget. Now question is how to achieve it? We have found some solutions.
For example:

1.Take financial help from others country: Any country can take financial help from other countries or financial organizations for achieving SDGs 7.

2.<u>Search different financial resources</u>: For achieving SDGs goal, it is necessary to continue money flow. So, search different financial resources.

3. <u>Population control</u>: Solve population problem is a good way for achieving SDGs goal

Q No-5: What do you think we can do to make cities sustainable and what makes them unsustainable? (SDG 11)

If we want to make a sustainable city then we have to achieve several criteria which is important for improving public life style.
For example:
1. Create better public transport

2. Increase use of bicycle

3. Make sure public health.

4. Include every fundamental requirement for people.

5. Give concern about carbon emission.

6. Small shop in every location.

What makes them unsustainable:

1. Un planed road transport system.

2. Established industry in the city area.

3. Energy deficiency.

Q No-6: How to motivate companies and citizens to sort and recycle waste?

This is a good idea to motivate people or companies to sort their waste like – paper, metal, glass, plastic etc. we can take some steps to motivate people for example:

1. Build community rules.

2. Strong government rules.

3. Use social media, print media for motivate people.

4. Organize stage program.

5. Money back incentive.

6. Young parliament member.

What do you think about building solar power plants near cities? What do you think could be the best place for solar power plants?

Regarding this question – I suggested that it would be great idea if we set solar panel in our rooftop then we can use it as per as our requirement. And we can choose some free and big area to set solar panel.
However, one of the participants from different university told us like their local government do not suggest to set solar panel in their rooftop. Because they think it will decrease city beautification. Interestingly every one was surprised.

SDG #11 group.

Answers to questions:

1. How can we satisfy the ever-increasing demand for energy and other resources (transportation, energy, healthcare, sanitation water or housing) caused by ever growing population of sustainable cities?

There are 3 theoretical ways: (1) to develop efficient ways to create energy and other resources, (2) to limit population growth in sustainable cities or (3) progressively lower consumption of energy and other resources.

In practice resources are limited; therefore, it would be necessary to learn how to restrict population growth in sustainable cities and learn how to lower consumption. One can limit population growth in such desirable cities in many ways. For instance, the government can impose local city tax, which would make prices higher and dissuade some people from moving into such cities. <u>There can be regulations on the number of houses in the city, so that the population stays constant and there is no overcrowding.</u> It is possible to create a system of social credit and make sustainable cities available to people with high social credit.

2. How can we provide equal and affordable access to limited resources, such as good healthcare (SDG3), quality education (SDG 4), clean water (SDG 6) or decent work (SDG 8) as well as overcome all Inequalities (SDG 10) for every city-dweller?

It is possible to provide every city-dweller with equal and affordable access to all those goodies <u>only when the supply equals demand</u>. This means that certain city-wide planning is necessary to assure that there are enough resources for every city dweller. This can be achieved with tight control and regulations as to how many houses, or what size are build in the city, so it becomes easier to predict the amount of citizens, and their demands for services.

3. What are ways to assure city's long-term sustainability despite continuous population growth?

The only way to assure long-term sustainability with CONTINOUS population growth is to CONTINOUSLY increase the amount of available resources. No other option will work, because even if people learn to become extremely efficient and environmentally conscious, they still, as human beings, continue to have certain needs, whereas CONTIOUS population growth will still increase the demand for resources that needs to be satisfied with new and new resources. Therefore, <u>it is important to avoid population growth explosion</u>. This can be achieved with proper education, and family planning. As noted earlier, it can also be achieved with proper infrastructural planning, so that the amount of housing and people in it does not put excessive pressure on the available city resources.

4. How can we deal with the problems that are linked to population growth that one can expect in attractive sustainable cities, such as: long queues, overcrowding, interpersonal conflicts, increasing pollution and waste, spread of viruses/infections and higher competition for decent jobs?

Only smart city planning can resolve problems, such as long queues, overcrowding, interpersonal conflicts, increasing pollution and waste, spread of viruses/infections and higher competition for decent jobs. By smart planning, one means understanding well social dynamics, human interaction and needs, as well as epidemiology. Smart cities will have enough infrastructure objects (shops, cafes, healthcare institutions, schools, kindergartens, parks, recreation areas, etc) for the given number of citizens, which will be limited by the limited amount of housing.

Smart cities will rely on technology and innovations to quickly serve customers before long queues form. For instance, one can use phone Apps to order goods and services online and to pay for them quickly without having to wait in lines. Similarly, one can attach RFID chips to consumer goods that get scanned automatically in the clients cart or hands as she/he approaches the cashier desk. The only thing a client has to do is to pay with a phone (App).

When the amount of housing is tightly controlled and known, it becomes possible to know the approximate population, and to predict the demand of public transportation, healthcare services, education, recreation, goods and services, etc.

By understanding the properties of various contagious diseases, it becomes equally easily to know what distance people have to keep from each other so not to spread the disease. Then one can calculate how many extra buses or trains are needed during pandemics to satisfy the existing demand for transportation.

Competition for decent jobs should NOT be viewed as a problem, because competition is exactly what drives the progress, productivity and innovation. Th at 's wh y th e more competition for decent jobs the better. On the other hand, smart cities should have enough alternative jobs for the citizens, which may be less prestigious and less desirable, but equally important. One should keep in mind that if the smart city provides overall high level of satisfaction in terms of the infrastructure, convenience and availability of services it would serve as a valuable factor in choosing a job. Some people would want high-paid jobs in overcrowded, dirty cities with traffic jams and unhealthy conditions. Also there would surely be people who would agree to have less paid jobs that are located in more convenient, greener and dweller-friendly places that sustainable cities can offer.

Julia Riabova

SDG TRANSFORMATION SPACE

QUESTION: How can we satisfy the ever-increasing demand for energy and other resources (transportation, energy, healthcare, sanitation water or housing) caused by ever growing population of sustainable cities?

Possible solutions:
- The first thing to change is to teach people how to use resources more efficiently. This could be done by promoting sustainable behaviors and practices among residents (Marketing, Apps)
- Implementing more efficient technologies and infrastructure
    - Creating a smart environment for people and businesses
    - Collecting and analyzing data that makes it possible to predict scenarios of risk situations as well as generate a demand for additional infrastructure
    - Smart home technologies make it possible to increase resource efficiency (in particular, saving electricity and water consumed by a household). In addition, with a certain technological support of the room, it is possible to create personalized scenarios of daily activities without human intervention.
    - Smart manufacturing technologies optimize and increases the efficiency of production processes, and make them eco-friendly
- Incentivizing (motivating) businesses to reduce their resource use
- Additionally, sustainable cities can also look to renewable energy sources, such as solar and wind power, to help meet their energy needs
- By taking a holistic approach to resource management and focusing on efficiency and sustainability, cities can better meet the needs of their growing populations.

QUESTION: What are ways to assure city's long-term sustainability despite continuous population growth?

Key strategies:
- To focus on developing a mix of housing options, including both high-density and low-density housing
- To accommodate a growing population while reducing the amount of land that is developed. This can help to reduce urban sprawl and preserve natural areas on the city's outskirts
- To invest in public transportation systems, such as buses, trains, and bike- sharing programs, to reduce the need for private vehicles and decrease air pollution and congestion on the roads. This can also improve accessibility for residents and make it easier for people to live without relying on a personal car
- Cities can work to promote sustainable building practices, such as using energy-efficient materials and design techniques, to reduce the environmental impact of new construction and development. This can help to reduce the city's carbon footprint and make it more resilient to the impacts of climate change.
- Build business ecosystems, where in one app you can get a lot of different services from food delivery, taxi, car-sharing to even calling a doctor
- Security should be an important point for a sustainable city. As due to growing population the rate of crime also increases. To tackle this problem different digital things could be implemented

- Example:

  Security system: implementing video analytics which is based on neural network technology that detects the occurrence of abnormal situations and can signal them to the operator for preventing (shopping malls, schools). Data from street cameras make it possible to quickly identify offenders, ensure the safety and comfort of citizens and protect city property from vandals.

QUESTION: How can we provide equal and affordable access to limited resources, such as good healthcare (SDG3), quality education (SDG 4), clean water (SDG 6) or decent work (SDG 8) as well as overcome all Inequalities (SDG 10) for every city-dweller?

Possible solutions:

- Enhance access to opportunities for youth
  - Provide effective employment and social support for young people in employment, education or training through collaboration between schools and the public employment service and targeted interventions
  - Promote good-quality and attractive vocational education and training with relevant work-based training by developing apprenticeship systems together with the social partners and permitting smaller firms to share the responsibility for a trainee's practical training.
- Enhance access to opportunities for women through good-quality employment
  - Tackle gender disparities across occupations
  - Improve the evidence base on gender gaps in the labour market by improving the availability of timely and comparable data, particularly for unremunerated work.
- Universal healthcare, which is a system in which all residents of a country have access to healthcare services without having to pay out-of-pocket expenses. In such a system, the government typically provides funding for healthcare services and covers the costs of necessary medical treatments for all residents. This can help to ensure that everyone has access to quality healthcare, regardless of their income level or ability to pay.
- For quality education government can prodive subsidies. In this case, the government would provide funding to schools and educational institutions to help reduce the cost of education for students and their families. This could include funding for teacher salaries, classroom materials, and other resources needed to provide a high-quality education. This type of policy could help to make education more affordable and accessible for all students, regardless of their economic circumstances.
- Businesses can help to address the issue of unequal access to limited resources in several ways. For example, companies can invest in community development programs that provide access to education, healthcare, and other important services. They can also work with governments and non-profit organizations to develop and implement policies and programs that promote equality and affordability. In addition, businesses can engage in corporate social responsibility initiatives that focus on addressing inequalities and providing access to limited resources for disadvantaged communities. By taking these steps, businesses can play a significant role in promoting equal and affordable access to limited resources for all city-dwellers -> BUSINESS GETS AN IMPACT

- Transportation:
  - Proving a more affordable and convenient public transportation, so that people use it more than just driving a car.
  - For example, in such small cities in Germany as Vohenstrauß (where I live) there is a system of transportation which is called "Baxi". As the time schedule for buses is bad, people could afford a drive on Baxi. So, there is a certain timetable when the Baxi's are going, but you need to call and order it at least one hour before the drive. Despite the fact that the car looks like a normal taxi you pay for it the price as like for the bus.

QUESTION: How can we deal with the problems that are linked to population growth that one can expect in attractive sustainable cities, such as: long queues, overcrowding, interpersonal conflicts, increasing pollution and waste, spread of viruses/infections and higher competition for decent jobs?

Solutions:
- Cities, countries and international bodies need to collaborate
- Reducing and managing food waste -> not in every city there is a good system of waste management
- Collecting data for building smart cities
- Implementing new technologies
  - For example, regarding reducing queues in shops, you can install chips to the products. So, that if you them into your bucket, they would be automatically scanned, when you pass a bucket from a certain line. So, you haven't to stay at the cashier.
- Investing in infrastructure that can support the increasing population: building new housing and transportation systems, expanding water and waste management systems, and developing public spaces
- Investing in public health initiatives to prevent the spread of viruses and infections. These strategies can help to manage the challenges of population growth and ensure that sustainable cities remain livable and attractive for residents -> implementing health chips
- Addressing challenges through a collaboration between the government and business in terms of the creation of public-private partnerships (PPPs). In a PPP, the government and a private company work together to develop and implement projects or initiatives that benefit the community. For example, a city government could partner with a private transportation company to expand the public transportation network. The government would provide funding for the project and oversee its implementation, while the private company would operate and maintain the transportation systems. This type of collaboration can help to leverage the expertise and resources of both the government and the private sector to address the challenges of population growth and promote sustainable urban development.

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"SDG transformation Space"

By: Ruhul Amin Noel

Key discussion:

- Dilemma
- Brainstorming
- Results

Some SDG dilemma:

- Intensive urban growth VS greater poverty

  (local governments unable to provide services for all people)
- Urban development vs Environmental hazard
- Mass urbanization vs affordable energy
- Mass urbanization vs clean energy

Brainstorming:

- By 2050- 6.5 billion people means new city for 1M people every week

Focus   points-

Inclusive:

- Transport
- Energy
- Health care
- Sanitation
- Water
- Housing

Safe & resilient:

- Natural disaster
- Climate change
- Health epidemics
- Economic crisis

Sustainable:
- Avoid reducing natural resources
- Reducing waste pollution
- Smart land use & transport planning
- Emerging environmental footprints of cities does not exceed planetary limits
- §

i.e 4 billion people still relied on inefficient and polluting cooking systems in 2020

Results:

How can we satisfy the ever-increasing demand for energy and other resources (transportation, energy, healthcare, sanitation water or housing) caused by ever growing population of sustainable cities?

Transportation:
- Encourage using public transportation
- Govt. should introduce more transportation method
- Making public transportation cost cheap and affordable so that everyone can use it
- Introduce new incentives like 9-euro ticket

Energy:
- Efficiency in Production
- Innovation in production
- Lean manufacturing for cheap production
- More plant for wind energy, solar energy, and hydroelectric energy
- Govt. may encourage and provide incentive for these
- Hydrogen as form of fuel (!)
- rechargeable cement battery
- (GBA is exploring how to achieve a circular and responsible battery value chain, which it sees as one of the major drivers to realize the Paris climate goals in the transport and power sectors. It says that by 2030, batteries could enable 30% of the required reductions in carbon emissions in the transport and power sectors

Water

- Saving as much water as possible from the production house
- By using ETP system, manufacturer can reuse the water
- Changing in some basic habits. Like;
- When watering plants, apply water only as fast as the soil can absorb it
- Teach children to turn off faucets tightly after each use
- Re-use the water for cooking pasta to water your plants
- Wash company vehicles at commercial car washes that recycle water.
- When washing dishes by hand, don't let the water run. Fill a basin instead

Housing:

- Using wastage to produce houses, cheap/ affordable/
- "IKEA house" in cheap price

  (Currently, buildings account for nearly 40% of carbon emissions in the world. The toxic nature of the building supplies being used and the lack of accounting for energy efficiency create a large, but avoidable, carbon footprint)

- Sponge cities (idea from Chinese rural living system melburry fish pond) + porous pavements+ tree plantation + water preservation through the green building system+ water stays from the rain/ flood and can be used again for household
- Can help reducing heat island effect
- Can save 70% rainfall water and can reuse

Healthcare:

- Free medicine from doc
- Telemedicine
- Philips medicine for circular economy, don't pay for machine but for apps and medicines

What are ways to assure city's long-term sustainability despite continuous population growth?

- Develop critical back-up systems for our aging water network to ensure long-term reliability
- By multipurpose facilities in terms of living, office, games, entertainment
- Use the unusable places/ already built but not using

- Creating more jobs
- Shared office popular in cheq
- Encouraging work from home
- Immigration facilities

How can we provide equal and affordable access to limited resources, such as good healthcare (SDG3), quality education (SDG 4), clean water (SDG 6) or decent work (SDG 8) as well as overcome all Inequalities (SDG 10) for every city-dweller?

SDG 3
- Provide basic health care training among generals
- Providing awareness training to stay healthy among the general people/ patients
- Creating local health care system (mobile health care)
- More transparent health insurance
- Stop unnecessary tests
- Virtual health care with efficiency

SDG 4
- Creating more schools/ colleges
- Mobile school
- Virtual classes
- Cheap academy chain. i.e. 10 minutes school

SDG 6
- Implement rainwater harvesting systems to collect and store rainwater for drinking or recharging underground aquifers. Build wells to extractgroundwater from underground aquifers. (old way)
- Promote low-cost solutions, such as chlorine tablets or plastic bottles that can be exposed to sunlight, to improve water quality

SDG 8
- paying fair income
- Guarantee a secure form of employment and safe working conditions

- Ensuring equal opportunities and treatment for all
- Social protection for the workers and their families
- Offering prospects for personal development and encourages social integration
- workers are free to express their concerns and to organise

Further info:

- Expand transportation and cheap price in transportation cost
- Carbon offset
- Carbon tax
- Better access to the shop/ bakeries
- Free environmental education
- Young parliament member
- Take Neighbor country as idol
- From the school they can have stage play and learning in EMS

Some   links   and   references:

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SDG

Bc. Karel Hudec, K22N0145P

Bc. Sára Marečková, K22N0168P

Bc. Pavla Martínková, K22N0170P

The seventh goal of SDG is concerned with ensuring access to affordable, reliable, sustainable, and modern energy sources. One way to provide sustainable and clean energy is the creation of solar power plants, which are currently very popular. It is because of the lower cost of construction which means lower cost for the user. Solar power plants are also very popular with households. They are lured in by partial self-sustainability in energy production and in the current situation, when energy prices grow quickly, also a lower energy bill. In the Czech Republic, it is possible to gain grants for building photovoltaic powerplants in value up to 200 000 Crowns.

The disadvantage of solar power plants is their size. The largest solar powerplant in the Czech Republic is in the Česká Lípa region and it takes up an area of 29 hectares, which is about the size of 6,5 Wenceslaus's squares. Compared to the Czech, Germany is further in the sphere of green energy. The largest solar powerplant in Germany is located near Wernuchen city and its size is 164 hectares. It generates 132 MW more, than the one in Bohemia.

For solar power plant construction, a large area of land is needed. It then comes to the point of view on the issue. Thanks to the construction of massive solar power plants the prices of land, which would otherwise be unused, or could be used in a different way, would increase. Is the green energy, or attractiveness of the surroundings more important for the residents?

That's why the first issue was the construction of photovoltaic power plants near cities and towns.

In the opening part, we demonstrated an issue with solar panels in Prague. Thanks to the war on Ukraine the Czech Republic is attempting to cut itself off from Russian gas, that's why alternative sources of heat are sought after and solar panels on the roofs are growing in popularity. To this situation conservationists are reacting, stating the buildings should remain in their original state, that's why they are forbidding solar panels in the center of Prague. That concerns also Smíchov, Žižkov, Holešovice, and Nusle districts. According to the conservationists by losing their original looks the buildings are also losing attractivity. The discussion group was highly surprised by this reality. So far, they did not encounter this issue. On the contrary, they stated they so far only met with positive onlook on the solar panels and their aspect of green energy provision.

Germany is in fact more progressive in this regard, compared to the Czech Republic. Their intent is to become a carbon-neutral country before the year 2040. Two of the constituent states have, in fact, become pioneers in solar panel construction by making installation on rooftops of houses and other buildings mandatory. So far, the duty only concerns the new buildings, or those in reconstruction. They even plan on building parking lots covered with solar panels. The opinion on solar power plants in the Czech Republic is getting worse with growing size, but they are also seen in a bad light due to their connection to higher land value, where the power plants are being built. Near the cities, suburbs are more likely to be built, which are much more attractive and desirable projects. In other cases, the power plants might be built on land that could be used for agriculture. In the Czech Republic, the land is primarily

used for rape growing, it is also being depleted by the usage of pesticides and industrial fertilizers, by which the land becomes unusable and it then could be used for clean energy production in form of solar power plants.

In the second question, we were discussing with the ideal placement of a photovoltaic powerplant

We found a common ground on the possibility to place solar power plants basically anywhere. Usually, solar power plants are installed on the rooftops, no matter sloped or flat. They can also be placed in free spaces on the ground in the shape of stands. The less usual placement are facades, balconies, or niches. Solar panels should not have any obstacles, meaning branches or other objects, that could obstruct the solar light from reaching the panels. That's why the orientation of the solar planes needs to be taken into consideration. Eastward orientation ensures the highest effectiveness in the morning. The best option is the southward orientation, which provides energy production for the entire day.

Solar powerplants are most often built on fields, such a solution seems sensible to us. There was also a proposal to build solar power plants along the freeways. In this case, there could be an issue with the shadow, because there are often trees planted along the roads. For the households, the roof installation is optimal, since the solar panels don't take up room on the ground.

It is important to also think of the climate of the given locality. Solar power plants draw energy from solar light, so a sunny climate is imperative. However, solar power plants are capable of energy production even in the winter and on cloudy days. That means a direct sunshine and high temperature is not necessary one hundred percent of the time. The climate in the Czech Republic and in Germany are very much alike. In the winter days are, of course, shorter and solar power plants are producing much less energy compared to the summer months, when the sun shines longer. Solar power plants are also affected by the snow. Being covered with snow will cause zero energy production. Mountainous or night-dominated regions are also inadequate locations for solar panels.

Given the fact, that solar power plants are using solar rays for energy production, it is necessary to state a country, city or a household can't become fully self-sufficient in energy production on solar power alone. It is therefore necessary to touch on other green energy sources.

A subject of discussion was also the motivation of people to put solar panels on their buildings. One way to motivate people to put solar panels on their roofs was some form of financial compensation. People could get financial benefits. A number of cities already started providing contributions to solar panels or lowering taxes for households, that use green energy sources.

University of West Bohemia

SDG Open Space report

Bc. Jolana Němcová
Bc. Barbora Janoušková
Bc. Filip Polák

15.12.2022
In Weiden

Introduction

The aim of this international meeting was to find possible solutions to research questions. However, in addition to their possible solutions, we took away a lot of knowledge about problems and differences in other countries. This document contains the wording of the questions and proposals to resolve them. The solutions to these issues have been developed in accordance with the SDG principles.

How to persuade citizens to contribute to the CO2 neutrality of cities by growing outdoor plants and watering them from rainwater?

This question had completely different results than we expected. The meeting was attended by students from different parts of the world and there were different perspectives on the problem.

We mainly wanted to deal with growing plants in cities and watering them with rainwater. The results of the meeting are as follows.

Introduce the planting of small plants in primary schools as part of the subjects (biology etc.) so that children know how to grow plants from a young age.

Free workshops can be organized for the older generation and that also creates an opportunity for selling plants (Monstera etc.). These workshops would teach people how to take care of the plants (amount of water needed etc.) and provide useful tips.

For those who don't have space for plants, there is the possibility of shared gardens. Where everyone can share their hobby and together create something beautiful. Which will also support social contacts and behavior.

Following the example of Singapore, shopping malls, large buildings and car parks can have roofs covered with greenery. So the big places that were green in the past can become green again and create oxygen and filter CO2 pollution. This will also help to reduce temperature during summer seasons in European cities like Prague, Budapest, Berlin, Rome…

New buildings that have to be built could be built in partnerships with architects who have experience with "green buildings", such as Moshe Safdie. There could be some regulations made about building new buildings - having at least 1 solar panel etc.

Our concept was to water these solutions from rainwater, however other countries don't have too much rain and so cannot collect rainwater. From that fact they would have to water the plants from tap water. So it was suggested to reuse water from washing dishes for watering.

To motivate companies, there could be tip boxes to develop planting.

How to motivate companies and citizens to sort and recycle waste?

Suggestions for solving this problem are as follows.

Creation of a department in companies that will deal only with recycling. The reward for this recycling will be in the form of tax relief. Companies will also be given a special badge for sustainability. The company will be able to reuse the recycled waste (production, logistics) or at least sort it.

Restrictions and fees will be proposed for those companies who do not sort the waste. Even if this is a negative incentive, it is still an incentive not to pay unnecessary fees and higher taxes.

Companies should only say they are sustainable if they show the whole production and sales process. If the process does not meet the conditions of sustainability from the start, the company has no right to call itself sustainable. The description of the process should be widely and freely available.

Government regulations could be made, such as stating a minimum percentage of rPET used in plastic bottles made by companies (Coca-Cola, Pepsi…).

When it comes to citizens and people as individuals, it is obvious that the younger generation is more concerned about saving our planet and therefore they recycle. That brought us to question "How to motivate and persuade people, who don't already recycle, to do so?" The main way to promote following ways of motivation and persuasion would be social media and products itself.

Impact of our doing (buying one-use plastic) could be shown more to people. Because if they don't see it, they can't feel it. For example, the impact could be shown on plastic bottles, pictures of animals who suffer and die due to plastic pollution, as health impacts of smoking are shown on cigarette package boxes.

People are competitive and envious species which would help in organizing competitions in recycling and waste sorting. Rewarding cities whose citizens sort the most (by %) with the title "best city in the world of 20XX" would be a good motivator.

Conclusion

Teaching children about growing plants is a key factor in the future, and so the emphasis should be placed on practical teaching about growing within biology.

In our eyes, fees and financial concessions are the biggest motivators. Today, companies have no incentive to sort waste and even have to pay considerable sums to dispose of it.

We would like to thank everyone who took part in this event and especially to those who made this event possible.

SDG Transformation Space

SDG 11: Sustainable Cities and Communities

Course: International Strategic Management

Submitted by: Yasir Zunair

Submitted to: Prof. Dr. Laura Denise Fischer

Ostbayerische Technische Hochschule
Amberg-Weiden

Date: 7 Jan 2023

Program

Master of International Management and Sustainability

Question No: 1

How can we satisfy the ever-increasing demand for energy and other resources (transportation, energy, healthcare, sanitation water or housing) caused by ever growing population of sustainable cities?

The increasing demand for energy and other resources is solved by public and private partnerships, the government make tax free zone outside the city to attract companies to build their warehouses and construct companies, it will help to reduce the crowd in the city, it will help the local surrounding to expand their business and create jobs outside the city, when they will find the job near to their home no one wants to migrate from their homes. Secondly, companies can provide extra allowance to employees who will live within a 10 Km radius of the industrial zone, which will attract employees as well to live.

Proper infrastructure for transportation is a necessary need for everyone, transportation must be trackable through mobile apps and everyone can access and track the route and location, the rent must be affordable for everyone. Government and private companies need to provide subsidiaries for every student to afford Electric bikes that can help to reduce the usage of Cars and Bikes, Car Pooling as well, it will help to reduce traffic jams and be cost-effective. 9 Euro is the best example for promoting public transportation and it helps reduce carbon emission

Energy is a basic need for everyone, Clean and affordable energy is needed to act against climate change the government and private institutes are working are experimenting the clean source of energy, we know that solar, wind, hydro, and geothermal are sources of clean energy, the solar is the more convenient and scalable source of energy. The upfront cost of batteries is not affordable for everyone, governments subsidies this cost to attract more households to shift dependence from conventional to the renewable source. The government is allowed consumers to shift solar energy into the national grid and it will be adjusted on the monthly bills this will help more to attract and split the cost. Wind power is installed in collaboration with private companies to utilize the source of renewable energy. The most difficult part is wind power is creating challenges for wildlife and bird, the expert also considering offshore wind turbines to save space.

Health care is most necessary need of everyone and it important for human beings as well, the government and NGOs working together to provide basic hygiene and health treatment services for everyone the startup is working to provide telemedical services, and the government is also needed to work with insurance companies to provide an insurance policy that covers basic treatment and it also affordable for everyone and its insurance companies also need to work for instant refund or complain solving solutions that give confidence to the customer. Philip and other medical companies are working to provide circular medical devices that help to reduce the upfront cost for hospitals and reduce the cost of treatment.

Sanitation and clean water are the most difficult for developing countries, the main problem is industries discharge wastewater without recycling that is caused thousands of diseases the chemicals are creating problems for everyone. With the insufficient storage capacity of rainwater and clean water, secondly, the difficult challenge is the sufficient availability of dams and water storage places. 70% of water is used in agricultural land, in developed countries they mostly use drip irrigation and sprinkler irrigation system to use less water and make a more efficient irrigation process. In developing, countries

farmers used flood irrigation processes that water 50 to 60% water. We must educate and make the rules and regulations for drip irrigation processes.

Housing is the most important and basic need of every individual, and it is the most expensive assistance for the purchase, Government needs to provide flexible loan installment options to purchase a home, and as we discussed before multiple ways of diversifying the concept of housing.

Question No. 2

What are ways to assure city's long-term sustainability despite continuous population growth?

More than half the world's population lives in cities. By 2050, an estimated 7 out of 10 people will likely live in urban areas. Cities are drivers of economic growth and contribute more than 80 percent of global GDP. However, they also account for more than 70 percent of global greenhouse gas emissions. If well-planned and managed, urban development can be sustainable and can generate inclusive prosperity. Rapid growth and poorly planned urbanization lead to many challenges, including a shortage of affordable housing, insufficient infrastructure (such as public transportation and basic services), limited open spaces, unsafe levels of air pollution, and increased climate and disaster risk.

First of all, We have to create the rules and regulations for the infrastructure and try to implement this process on the existing infrastructure, and secondly, we need to create a checklist for new construction and a checklist for the housing societies that can provide the complete base for the development, If we can creating new infrastructure and we know that what is missing and calculating the cost for new 20 to 30 year, we can easily prepare the long term sustainable infrastructure that will reduce dependence on slums house.

The second and most important thing need to be done on the government level that is the tax for providing affordable and easier housing development facility, for example, if you are working in a private company as the company deducts provident funds for your future, it can be the same process for buying a house, after 5-7 year you can get your contribution back and try to buy some property and company deduct money from your salary, It helps individual to buy a property in an easier way.

Question No. 3

How can we provide equal and affordable access to limited resources, such as good healthcare (SDG3), quality education (SDG 4), clean water (SDG 6) or decent work (SDG 8) as well as overcome all Inequalities (SDG 10) for every city-dweller?

Resources are limited in the last century we have used massive resources to promote industrialization, we produce billions or trillion tons of waste for producing single time usage products, Plastic destroyed our sea and oceans livelihood, Oil usage increase carbons emission, Transportation by cars increase conjunctions on roads, untreated water waste of industries in open land increase the challenges for local populations. We cut millions of trees for making mansions and housing society without thinking about the cost of loss for others. Healthcare SDG3 is a basic need for everyone in Pakistan, it is the last need for the average person because they can't afford to pay for medical healthcare, firstly it is expensive and secondly, it is difficult to access for everyone. Insurance packages are complex, and it does not accessible in every hospital in the city. As we have above discussed public and private collaboration is working to provide affordable access to healthcare and insurance companies are working to collaborate for making insurance for everyone it will decrease profit margin, but they will get continuous income streams. NGOs

are collaborating with local communities to provide knowledge regarding hygiene and free medicine camps for providing health issues.

Quality education is needed for everyone, education is not about getting a degree and doing jobs, education is about understanding norms and beliefs, to get the access of knowledge that can give you freedom of your thought processing and sharing the direction, the way of achieving the target, it's a lifetime process that can give you learning in school, educational institutes, professional career and it starts from your childhood. The day you are born you start observing the thing that is happening around you and you can memories in your conscious mind. The government is promoting free education that helps to learn and grow the skills that make your life easier. Germany and other developed countries are promoting free education systems that help to encourage education. In Pakistan, the public education system is not strong most student is preferring to go to a private school that is expensive, but now some private companies as CSR activity they are creating free education school to promote education in rural areas, now government and NGOs are collaborating to create impact government provides the infrastructure to a rural area, NGOs monitor and provide administration facilities.

In my opinion, the definition of decent work is needed to clarify. The person who is doing a job in the textile industry as a laborer from 9 a.m. to 5 p.m. is getting less than 120 USD, in that income, they must pay rent the house, utility bill, groceries, and their family is dependent on 110 USD. This salary is defined by the federal government; I believe we must reevaluate the salary.

Reducing Inequality is a difficult challenge for developing countries, In Pakistan, the average person's opinion is not considerable, the first challenge is IMF, the Chinese Loans for developing infrastructure, and Arab loans. Our policies are not designed by us. It is created by lenders. Collaboration and free port shipment these all ideas discussed but the challenges are all these infrastructures need the investment of millions of dollars, for all this huge investment you need a lender, and it gives you money from his own terms that create challenges for all foreign investment.

Question No. 4

How can we deal with the problems that are linked to population growth that one can expect in attractive sustainable cities, such as: long queues, overcrowding, interpersonal conflicts, increasing pollution and waste, spread of viruses/infections and higher competition for decent jobs?

We have thought one more time regarding the long queues and overcrowding it is not about the covid, it is about the time, the problem with long queues is we are wasting huge time for nothing, in the overcrowding place in supermarkets and fast food chain are trying to reduce this problem by providing self-checkout counter and fast food chain are providing drive-thru take away for the customer it helps to reduce the crowd on the cash counters. Interpersonal conflicts are not a challenge it is the opportunity for both parties to seat together, discuss their opinion, share thought and try to convenience each other with references, facts, and figures it is also important to understand that both parties need to open and accept the negotiation. Air pollution is the most challenging task all over the world. Ikea is selling ready to assemble furniture, they are selling furniture in 63 countries their marketing strategy is they sell their product to consumers after a few years if you want to purchase or change the furniture consumer can resell their furniture to Ikea and buy new furniture. They repair and resell this furniture to another consumer at a discounted price. The circular economy concept helps consumers, Ikea, and the planet as

well. Pollution and waste management are difficult to challenge all over the world. Recycle process is complex and difficult to do. The milk container is recyclable, but the challenge is container contains multiple types of plastic, foil, and carton. The difficult challenge is not a single machine can do all the processes, different processes and completely different machines are required to recycle. Waste management companies are trying to educate consumers for separating the waste into different categories. 4R concept Rethink, Reuse, Reduce, Recycle. I believe, if we memories this concept it will help to reduce miscellaneous purchasing and help to save the world.

Question No. 5

Biodiversity on land is an important issue for our environment, every year millions of trees are being cut down for preparing food around the world, so will it be possible to reach the goal of Life on Land (SDG # 15) without achieving the target of SDG # 7?

Biodiversity on land is an important issue not for the environment it important for the survival of human's mankind, if the animals and plant ratio decreases the survival of food is increase and it will be causing the death of millions of people, we have seen examples in history the most famous example was China

The thrust campaign was to eliminate four pests, viz. rats, flies, mosquitoes, and sparrows. Also known as "Smash Sparrow", this campaign launched in the year 1958 by Mao Zedong is the worst ecological disaster known to mankind. Mao felt that sparrows ate too much grain and China could do without such pests.

Fertilizer and pesticides help us to produce mass production of food, but it decreases the yield of land and increases the PH level of water, the chemicals are one the main reason for drought, Agricultural land where you have used fertilizer and pesticides needs 10 years to recover and after that organic farming is produce. Malaysia and Indonesia cut down forests for producing cooking oil, it was paying huge profits to individuals in the circumstance now seen that climate change happening in these countries. Wildlife animals are decreasing every year. First, we must reduce the consumption of everything, nothing is for granted and nothing is free in this world, someone must pay the cost. In my opinion life on land, is much more important than affordable housing and clean energy.

The preservation of biodiversity is not just a job for governments. International and non-governmental organizations, the private sector, and everyone have a role to play in changing entrenched outlooks and ending destructive patterns of behavior

Kofi Annan

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ESD for 2030:

SDG TRANSFORMATION SPACE

[**S**ensibilisieren] [**P**otentiale **A**ktivieren] [**C**hancen **E**rgreifen]

SS 2022/23

Mögliche Lösungen der identifizierten

Nachhaltigkeitsdilemmata
University of West Bohemia

ESD for 2030:

SDG TRANSFORMATION **SPACE**

[**S**ensibilisieren] [**P**otentiale **A**ktivieren] [**C**hancen **E**rgreifen]

4nd Open Space Meeting

Date: 31. 05. 2022, 10.00 – 14.20
Place: Multifunktionsraum der OTH Amberg-Weiden
Supervisor: Mag. Cornelia Oszlonyai
Coach: doc. Dipl.-Ing. Dita Hommerová, Ph.D., MBA

10.00 – 10.10	Welcome and Registration
10.10 – 10.20	Key Information For The Day

10.20 – 10.45 **Ankita Khanna, Mila Sazonova, Evans Nnamdi Chibueze, Md. Akram Hossain, Fabian Neuber, Ankur Paul** How can cities reconcile the need for economic growth with the goal of creating sustainable, inclusive, and resilient communities? How can urban areas minimize negative environmental impacts while promoting economic development and ensuring safety and inclusivity?	10.20 – 10.45 **Marzieh Baradaran, Melika Fakhra , Hettiaratchige Mary Shanaya Perera** How can we effectively change consumer behavior to reduce food waste while ensuring food safety and quality?
10.45 – 11.10 **Jule Marie Wenzl, Ilyayda Mustafa, Himani Gola, Sebastian Christian Niklas** How can we ensure safety for schools that offer the education?	10.45 – 11.10 **David Zadák** How can we balance the need for economic growth and innovation through infrastructure development with the urgent need for climate action?
11.10 – 11.35 **Syed Ammar Haider, Syed Muhammad Asghar Jaffri, Mohammad Javad Ghasemian Yeganeh** How can we effectively balance the promotion of renewable energy sources, such as solar and wind power, with the need to address social and economic disparities in	11.10 – 11.35 **Andrea Živná, Trang Huyen Le** Do you think it is possible to ensure that the towns/cities does not expand and thus damage the surrounding landscape?

the implementation of Sustainable Development Goal 7 (SDG7)?	
11.35 – 12.00 **Marzieh Baradaran, Melika Fakhra , Hettiaratchige Mary Shanaya Perera** How can we minimize post-harvest losses and food waste in small-scale food production while enhancing agricultural productivity and incomes?	11.35 – 12.00 **Václav Frouz** How to solve conflict between goal (7.1) affordable energy and (7.2) clean energy, when clean energy is now more expensive to produce?
12.00 – 12.45 Lunch	**12.00 – 12.45 Lunch**
12.45 – 13.10 **Jule Marie Wenzl, Ilyayda Mustafa, Himani Gola, Sebastian Christian Niklas** How does one make people aware of the underlying benefits of using the given facilities?	12.45 – 13.10 **Václav Frouz** How to fulfil goal "Saving water releated ecosystems" (6.6.1), when goal "reducing green house emissions" (13.2.2.) is linked with electrification of automobiles and battery produce ?
13.10 – 13.35 **Ankita Khanna, Mila Sazonova, Evans Nnamdi Chibueze, Md. Akram Hossain, Fabian Neuber, Ankur Paul** Should resources be primarily allocated to retrofitting existing cities or developing new, purpose-built sustainable urban areas? How do we balance upgrading existing infrastructure and creating new, sustainable communities from scratch, considering cost, efficiency, and community impact?	13.10 – 13.35 **David Zadák** How can we ensure that the benefits of infrastructure development and innovation are distributed fairly and do not harm the environment or marginalized communities?
13.35 – 14.00 **Syed Ammar Haider, Syed Muhammad Asghar Jaffri, Mohammad Javad Ghasemian Yeganeh** What strategies can be employed to ensure universal access to affordable and reliable electricity while minimizing the environmental impacts associated with increased energy generation, as outlined in SDG7?	13.35 – 14.00 **Andrea Živná, Trang Huyen Le** How to reduce the carbon footprint without increasing unemployment and thereby affecting economic growth?
14.00 – 14.10 Closing Ceremony	

Conflicts between sustainable development goals

30.6.2023

Václav Frouz

Content

Affordable and clean energy conflict

Introduction

The conflict between clean and affordable energy is problematic and complex issue. The transformation of electricity produces from unsustainable energy source to sustainable while maintaining availability for all people is a challenge for our generation.

Initial cost of renewable

In recent years the cost for those technologies become more available for all paygrades. With increasing demand for those technologies, they are becoming cheaper and more effective. With those sentences comes in mind few questions. Will every person pay for his solar panels? How low-income households will pay for these panels? Should government support buying solar panels? Those questions will be discussed and some answered bellow.

Shock energy

Solar panels are generating energy only at daylight, at night they are generating zero to non-energy. Wind turbines are generating energy depending on weather in windy conditions they can generate big amounts of energy. Because of that they are overloading power grid. The power grid was built for few power plants, which will produce same amount of electricity every hour. Another problem is what if weather becomes non usable for our technology? We would need to build energy storages. Those could be battery plants, gravity batteries.
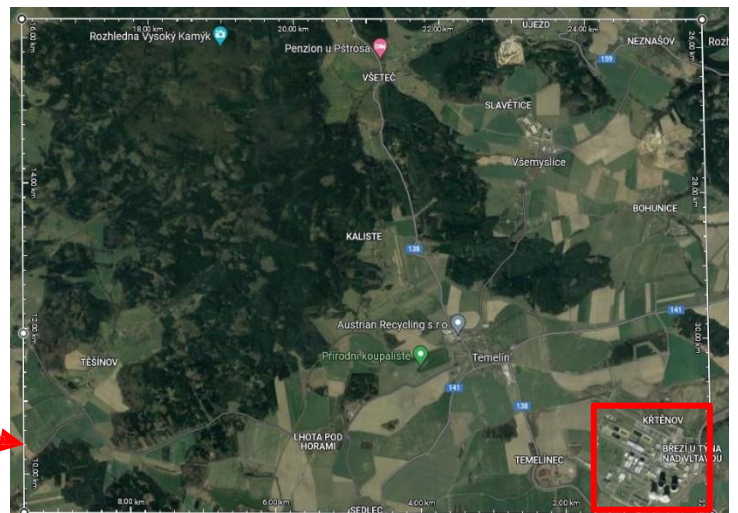
Less effective

Renewable energy sources are less effective in space efficiency. Theoretical efficiency of solar panels is 34% (current is 18-23%), wind power station 60%, waterpower station 70-90%. Nuclear power plant efficiency is around 30% but it can produce big amount energy on small space.

Picture 1
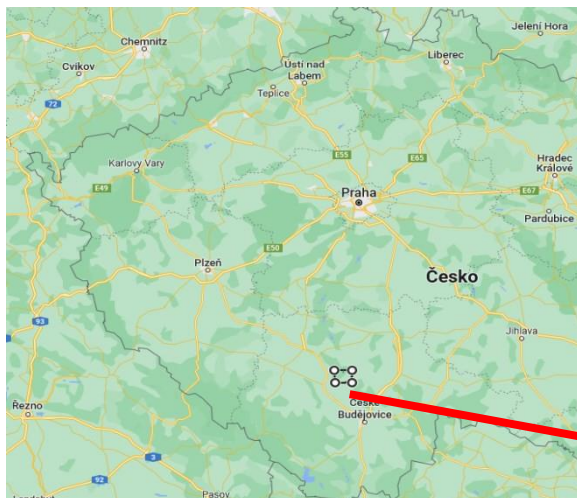
Zdroj: Vlastní zpracování (2023)

Picture 2

Zdroj: Vlastní zpracování (2023)

The picture on the left side represents how big of a land must be taken by solar panels to get on the same production as a nuclear power plant (in red box on right picture). This nuclear power plant is producing 18% of whole energy production in Czech Republic.

Examples

Good examples

1. In many states solar panels are supported by government through financial support. That creates opportunities for low-income households. The support in Czech Republic is maximum 50% of the price of solar panels. Theoretically if low-income family want small solar plant on the roof, they can be acquired by 1,5 of average pay in Czech Republic (60 000 CZK).

2. After renewable energy source is installed, it takes small to non-expanses to make it run smoothly. Many of this source have long lifetime 20 to 30 years. This is great property of renewable energy if they are used in low-income households.

Bad examples

1. If government supports renewable energy too much, it will affect economy and government treasury due to big expenses. With this is connected building huge solar and wind plants on places where can be grown food or build houses. Some people calculated that building these plants will generate bigger income than selling these fields to people who wants to build a house or farmers who wants to grow food.

2. To this date solar panels or wind turbines are technologically hard to recycle, because of that the recycle method is ineffective and costly. That's why every solar panel producer is paying recycle fee to support recycling on end of the lifetime.

Solutions

On the SDG meeting in Wieden we came up with interesting ideas, that can help in solving these conflicts between affordable and clean energy.

In all the discussed topic we agreed that education is priority in solving most of the environmental problems. If people are educated, they will not waste energy irresponsibly and our global energy consumption will decrease. With decreased consumption, we will not need as many sources of electric power.

Another topic was that now we pay for produced electricity by thermal and nuclear power plants. That's because they need highly schooled personal, many people to operate, fuel and they are expensive to build, especially nuclear power plant. The idea was, what if the money we pay, would go on repaying depth, for installed renewable energy source as solar panels, waterpower plant or wind power plant. We would not pay for produced electricity, but for installed output. That would solve the initial cost problem, state would take a big loan and people would repay it. In few years depth would be paid, and energy would be almost free for everyone.

As it was written in bad examples renewable source are bigger and they are placed on impropriet places. That's why it should be moderated where can be putted and where cannot. One of the great places is on the roof of the manufacturing plant. These are large flat surfaces that are perfect for solar panels. Europe should issue a law that will prohibit using high scale solar power plants on fields.

The use of solar panels on the roof is great, but not every roof is used, because financial status of families or it is not priority investment for families. Therefore, we should have the option to rent our rooftop to the state.

Saving water related ecosystems and reducing greenhouse emissions

Introduction

Conflict between these goals is linked with battery production for electric automobiles. As we know cars are producing emissions from burning fuels (diesel, petrol gas etc.). If we take common engine 1.5. TSI from Volkswagen it produces 12,6 kilograms of CO_2 per 100 km. With diesel car the emissions are a bit higher. In years we improved the environmental footprint through innovations and overall lowering of engine volumes.

Another step we took, was the decision, that we will stop producing fossil fuel powered engines in Europe by 2030 and will replace them with electric cars, hydrogen cars and any new green form of powering a car.

Picture 3

Passat Variant Business 1,5 TSI EVO 7DSG
Technická data

110 kW (150 koní)   Aut. DSG7
Benzin 95

Emise CO2:   Spotřeba paliva
146 - 171 g/km   6,4 - 7,5 l/100km

od 1 001 900,- Kč   13 440,- Kč měs.

Zdroj: Volkswagen (2023)

In electric car we don´t have a tank, but we have a battery. The most two used elements in battery are lithium and cobalt. Both elements are toxic and potentially dangerous for the environment.

For mining lithium is required large amounts of water and the water is contaminated afterwards. In THE San Cristóbal Mine in Bolivia, the said that they use 50 000 litters of water per day. It has been labelled as and environmental and social disaster.

Cobalt mining is very controversial due to cobalt mine in Congo, where miners are working in terrible conditions. Many of them die stuck in the cave and they are paid bare minimum. Also, cobalt mining operations can pollute nearby water sources through various means, including accidental spills, inadequate waste management practices, and the release of toxic chemicals. The extraction and processing of cobalt often involve the use of chemicals, such as sulfuric acid and other solvents, which can contaminate water bodies if not handled properly.

Examples

Good examples

1. Sodium ion batteries

   One of the greatest new in electromobility industry was that China opened new factory on sodium ion battery intended for electric car. This is a huge step because to this date the only used battery was lithium ion. Sodium is much more available element, and the mining is more

environmentally friendly, than mining lithium or cobalt. This comes with a cost of less energy dense and lower lifespan. Of course, the technology is in early stages and with time will come improvements.

2. Hybrid cars

The hybrid cars are using best of the 2 words. That's engine on petrol with easily refillable tank and small battery for short trips or driving in traffic jam. In most of the cars, there is no need in recharging the battery it´s recharging itself by breaking and going on petrol engine. Thanks to this technology the consumption can be lower by a half.

Bad examples

1. Pushing electromobility no matter what

I described the problem in introduction what is bad on manufacturing cars, but another problem is with driving them all around a globe. As I said in introduction one of the common engines from VW produce 12,6 kg of CO_2. Electric cars don't produce emissions, but they consume electricity that is produced by power plant. The power grid is made up of different sources in every state. For example, 40% is from coal, 40% nuclear, 15% from renewable sources. That means that Škoda Enyaq (electric automobile) every 100 Km consumes electricity equal to 7,5 Kg of CO_2 . If we look at the pollution by battery production, it is not optimal to use electric cars if we don't upgrade our power grid.

Picture 4
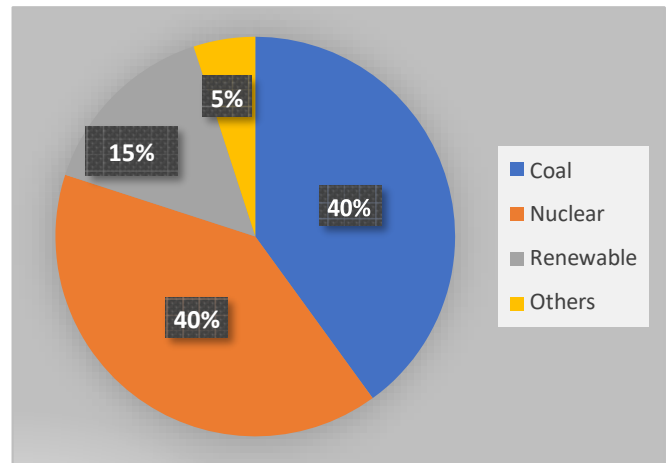
Zdroj: Vlastní zpracování (2023)

2. Large-scale hydropower projects

Large-scale hydropower projects can cause significant damage to water-related ecosystems. The construction of large dams and reservoirs leads to the destruction of natural habitats, including forests, wetlands, and river ecosystems, resulting in the loss of biodiversity and disruption of ecological balance. The alteration of river flow patterns and the fragmentation of fish migration routes due to dams further impact aquatic ecosystems, leading to reduced fish populations and ecosystem degradation. Additionally, the formation of reservoirs can lead to water quality issues, such as increased sedimentation, pollutant accumulation, and harmful algal blooms. The submergence of riparian zones exacerbates the loss of critical habitats and the disruption of ecosystem functions.

Picture 5

Zdroj: Union of Concerned Scientists (2013)

Solutions

Research and Innovation: Invest in research and development to find new technologies and approaches that can reduce the environmental impacts of energy production while meeting greenhouse emission reduction targets. This includes advancements in battery storage technologies, energy grid management systems, and renewable energy generation techniques.

Investing in Renewable Energy Alternatives: Promote the development and use of renewable energy technologies that have minimal or no impact on water ecosystems. This includes solar energy, wind energy, geothermal energy, and tidal energy. By diversifying the energy mix, reliance on hydropower can be reduced, minimizing the potential conflicts with water ecosystems.

Integrated Water Resource Management: Adopt an integrated approach to water resource management that considers both energy production and ecosystem conservation. This involves rethinking comprehensive environmental impact assessments before implementing any large-scale water projects and considering alternative renewable energy sources that have lower impacts on water ecosystems.

Strengthening Policy and Regulations: Implement and enforce stringent environmental regulations and policies that require the protection and restoration of water ecosystems. This includes setting strict water quality standards, promoting sustainable water use practices, and establishing protected areas to conserve sensitive aquatic habitats.

By implementing these solutions, we can improve our greenhouse emissions while conservation of water related ecosystems.

Conclusion

Both conflicts are important for future of our planet. Through educated and informed population, we can achieve changes and fulfilled solutions. In Wieden we all agreed that if people are not informed and educated about these problems, they will never do something to change it.

OTH Amberg-Weiden

Bachelor students of International Business

Summer Semester 2023

Workshop on the Sustainable Development Goals (SDG)

Jule Wenzl

Himani Gola

Ilyayda Mustafa

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SDG Goal 6: Clean Water and Sanitation

How does one make people aware of the underlying benefits of using the given facilities?

The globe today, undoubtedly, faces immense challenges to sustainable development.
This includes poverty, inequality, and many other related factors. To combat such challenges and to ensure that our earth is peaceful, prosperous and safe for all inhabitants of this planet, the 17 SDGs, also known as *'Global Goals'*, were enacted by the United Nations in 2015.[1]
This paper attempts to gain an insight into the challenges faced by India in achieving the Sustainable Development Goals (SDGs), in particular SDG 6 ("Ensure availability and sustainable management of water and sanitation for all"), and further attempts to suggest some measures to address these challenges based on a group discussion in a seminar.
The question has been derived from the given research material "India's achievement towards Sustainable Development Goal 6" in the 2030 Agenda. After reading the material thoroughly, we stumbled over the contradiction that there is a majority of households owning toilet facilities but still not using them or not using them to their fullest.
About 89% of households without a toilet were situated in rural areas. Although the Indian Government has spent decades building toilets and the country has had consistent economic progress, the number of open defecation statistics in the countryside remained stubbornly high. Inadequacies in rural infrastructure are undoubtedly a major cause of failure.
This made us ask ourselves, what could be possible reasons for this behavior. Furthermore, we were searching for possible solutions for how the benefits of so-called "WASH" ('water', 'sanitation', and 'hygiene')[2] toilet facilities could be communicated to the population.

Throughout the group discussion, we figured that the cause of this behavior might draw from societal norms or beliefs. Norms and sanitation policy would likely be more effective, if they addressed the underlying social environment in which decisions about where to defecate and what types of toilets are socially acceptable, are made. Especially in rural areas, even well-educated people who live there are adopting toilets at a slow pace and using them for sanitary purposes.
Nonetheless, grown-ups, may it be parents, teachers, idols, etc., who teach and guide children and teenagers, must be made aware of the benefits of using these toilet facilities and further be educated about the illnesses and diseases which yield from it. For this, educational facilities could be introduced. Another driving factor is the education offered to children. As poor sanitation puts children's lives at risk of water-borne diseases and malnutrition, which can impact their overall development, ability to learn, and, later in life, children should be mindful of clean water and sanitation and not be overusing it.
Additionally, the Indian government is obligated to spread awareness within India. For example, #MyCleanIndia [3] is a further strategy established by celebrities. Such celebrities play a key role in propagating the *'Swachh'* (cleanliness) message. Some people look up to their role models and follow their ways as devotees. Famous personalities make things attractive by performing their art and inspiring people, and if they take up any social cause, they intend to get a huge fanbase for the same which makes people even more responsible towards society. As a result, they take this cause more seriously and strive to make the world an even better place to live in.
Further strategies, on one hand, may be the visualization of rudimentary benefits accompanying the use of sanitation facilities. The government could, as an example, make use of positive incentives by establishing sanitation, hygiene and drinking water infrastructure and implementing awareness programs there. On the other hand, advertising the diseases/illnesses, the unpleasantries and disadvantages of not using WASH facilities. Last but not least, further measures should be taken to make these facilities more accessible and convenient to its inhabitants, thus increasing the

possibility that these facilities will be used more often and encourage or ease their choice of using these facilities in the future.

In conclusion, to prevent and reduce deaths from acute and chronic diseases and maintain healthy lives, there is a need to increase awareness and facilities for access to safe and adequate drinking water, sanitation, and hygiene. The key factor here is the right education and offering the right education to everyone. Be it through famous personalities, politicians, advertisements, the right message needs to be conveyed. By integrating these measures, the accompanying risks and change in behavior could possibly be minimized even further since a majority of these installations already exist. Lastly, achieving 100% of this SDG 6 through a specific regional development approach (at a local level) could also successfully help the country as a whole in making large-scale progress.

Solutions to SDG Target 6 "Clean Water and Sanitation":
-1 Introduce norms / sanitation policies for where to defecate and what facilities are eligible

-2 Representatives/Idols who teach and guide others should be educated
→ Being made aware of the underlying diseases and illnesses
→ Introduce education facilities

-3 (Additional) Education for children on how to use these toilet facilities and sustainable use of water
→ Decrease water-borne diseases and malnutrition
→ Increase value of life

-4 Higher involvement of the government and of famous people
→ Raise higher awareness to the majority of the population
→ Famous people make it more attractive and inspire others while playing a key role in propagating the *'Swachh'* (cleanliness) message

-5 Visualization of rudimentary benefits accompanying the use of sanitation facilities from the government
→ Make use of positive incentives by establishing sanitation, hygiene and drinking water infrastructure and implementing awareness programs there
→Visualizing the diseases/illnesses, the unpleasantries and disadvantages of not using WASH facilities

-6 Make the facilities more accessible and convenient to its inhabitants
→ Increasing the possibility that these facilities will be used more often
→ Encourage or ease their choice of using these facilities in the future.

Sources:

(1) https://www.undp.org/sustainable-development-goals

(2) https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-022-14316-0

(3) https://swachhindia.ndtv.com/mycleanindia-celebrities-spreading-swachh-message-5207/

FAKULTA EKONOMICKÁ
ZÁPADOČESKÉ
UNIVERZITY
V PLZNI

Semestral work

SDG Tranformation Space

David Zadák

Pilsen 2.6.2023

Content

1. Conflict in Sustainable Development Goals

Climate change is one of the most pressing challenges the world faces today, and it is crucial that we take immediate action to mitigate its impacts. At the same time, economic development and job creation are essential for many communities, particularly in developing countries. The Sustainable Development Goals (SDGs) provide a framework for achieving both of these goals, but sometimes they may seem to be in conflict. In particular, Goals 9 and 13 highlight two areas where potential trade-offs can occur: industrialization and infrastructure development versus climate action.

Picture n.1 SDGs

Goal 9 calls for the building of resilient infrastructure, promotion of inclusive and sustainable industrialization, and fostering innovation. This goal is critical for many countries, especially those in the early stages of development, as it is key to supporting economic growth and job creation. However, traditional methods of industrialization and infrastructure development have often relied heavily on fossil fuels, leading to high levels of greenhouse gas emissions that contribute to climate change.

On the other hand, Goal 13 calls for urgent action to combat climate change and its impacts. This includes reducing greenhouse gas emissions, adapting to the impacts of

climate change, and promoting sustainable practices. Achieving this goal will require significant changes in the way we

produce and consume energy and may entail some compromises in terms of economic development and job creation.

Finding a way to balance these two goals is crucial for creating a sustainable future for all. Fortunately, there are a number of possible solutions that can help achieve both objectives.

Picture n.2 Backlash of industralization

One important solution is to support the use of clean energy sources such as solar, wind, and hydroelectric power. These energy sources emit minimal or no greenhouse gases, making them much more sustainable alternatives to fossil fuels. Governments and businesses can encourage the use of renewable energy by offering tax incentives, subsidies, or other financial incentives. In some cases, renewable energy may be cost-effective compared to traditional energy sources, making it an attractive choice for businesses and communities.

Another possible solution is to embrace eco-friendly construction practices in infrastructure development. Green buildings are designed to minimize their environmental impact by using energy- efficient systems, sustainable materials, and water-saving technologies. By incorporating green building practices into infrastructure development, we can reduce the overall carbon footprint of these projects and promote sustainability.

Sustainable industrialization practices, such as principles of circular economy, can also help minimize waste generation and promote efficient resource utilization. By reusing and recycling materials, businesses can reduce the need for new resources and lessen their environmental impact. This can be achieved through innovative business models, such as product-service systems, where products are leased or borrowed instead of being sold.

It is also important to involve all stakeholders in the decision-making process for infrastructure and industrial development. This includes communities, civil society organizations, and other relevant stakeholders who can provide valuable insights into potential environmental and social impacts. By engaging all stakeholders in the process, decision-making authorities can ensure that development is inclusive, sustainable, and environmentally responsible.

Lastly, we can promote sustainable lifestyles and consumption patterns. This includes encouraging individuals and businesses to reduce energy consumption, recycle materials, and adopt sustainable practices. Governments can support sustainable lifestyles through educational and awareness programs, promoting sustainable products and services, and providing incentives for sustainable behavior.

In conclusion, achieving Sustainable Development Goals 9 and 13 requires a delicate balance between economic development and environmental protection. By supporting the use of clean energy, implementing eco-friendly construction practices, promoting sustainable industrialization, involving all stakeholders in decision-making, and encouraging sustainable lifestyles, we can achieve both goals and create a sustainable future for all.

1. How can we balance the need for economic growth and innovation through infrastructure development with the urgent need for climate action?

One possible way to balance the need for economic growth and innovation through infrastructure development with the urgent need for climate action is by adopting a sustainable development approach. This involves promoting green infrastructure and clean technologies that support economic growth while minimizing environmental impacts. For example, investing in renewable energy projects and energy-efficient buildings can stimulate economic activity while reducing carbon emissions.

Additionally, implementing effective policies and regulations can encourage sustainable practices in infrastructure development. This can include setting emissions reduction targets, promoting sustainable transportation options, and incentivizing businesses to adopt eco-friendly practices. By integrating climate considerations into infrastructure planning and decision-making processes, it is possible to strike a balance between economic growth, innovation, and climate action.

Collaboration between government, businesses, and civil society is crucial in driving this balance. Engaging stakeholders in dialogue and incorporating diverse perspectives can lead to more sustainable and inclusive infrastructure development. By prioritizing climate-smart solutions, it is possible to achieve economic growth and innovation while addressing the urgent need for climate action.

1.1. Examples

The Suzhou Industrial Park (SIP) in China is an example of how industries can grow while also protecting the environment. SIP was created in 1994 by China and Singapore to support sustainable and inclusive industrial development in the area. They have done a good job of balancing economic growth and environmental concerns through innovative practices. For example, they have strict rules about emissions, waste management, and protecting resources. SIP has also invested a lot in renewable energy like solar, wind, and water power. They aim to generate 20% of their electricity from renewable sources by 2020. Another important thing they do is follow the principles of a circular economy. This means they try to reduce waste and use resources efficiently. They encourage companies to work together, so what is waste for one company becomes a resource for another. For
example, they use waste heat from power plants to warm nearby buildings and waste water from factories to help fish farms. In addition to all these environmental efforts, SIP also does things to help the local community. They have programs to support education and training for people, invest in infrastructure, and help small businesses.

Denmark has focused on wind energy development, becoming a global leader in wind power generation. The country's commitment to renewable energy has stimulated innovation and attracted investments, leading to economic growth. Moreover, Denmark has significantly

reduced its reliance on fossil fuels and achieved a high share of renewable energy in its overall energy mix.

ExxonMobil is a company that has faced criticism for causing conflicts between economic growth, building infrastructure, and taking action on climate change. They are known for being one of the biggest oil and gas companies in the world. Some people accuse ExxonMobil of funding campaigns that deny climate change and spreading wrong information about the risks of carbon emissions.

Critics say that ExxonMobil's investments in oil and gas and their opposition to climate change policies make it harder to move towards an economy that uses less carbon. Even though the company has made some promises to reduce methane emissions recently, they still heavily rely on fossil fuels for their main business.

ExxonMobil's case shows how difficult it can be for companies in industries that use a lot of carbon to balance making money with taking action on climate change. It also shows that we need more openness, responsibility, and a shift to sustainable practices in the fossil fuel industry to address the conflicts between economic development and fighting climate change.

1. How can we ensure that the benefits of infrastructure development and innovation are distributed fairly and do not harm the environment or marginalized communities?

To ensure that the benefits of infrastructure development and innovation are distributed fairly and do not harm the environment or marginalized communities, several measures can be taken:

Inclusive decision-making: Engage all relevant stakeholders, including local communities, marginalized groups, and environmental organizations, in the planning and decision-making processes. This ensures that their voices and concerns are heard and incorporated into the development plans.

Environmental and social impact assessments: Conduct thorough assessments to identify potential environmental and social impacts of infrastructure projects. This includes evaluating the project's effects on ecosystems, air and water quality, and the well-being of nearby communities. Mitigation measures can then be implemented to minimize any negative consequences.

Equitable resource allocation: Ensure that the benefits of infrastructure development are distributed fairly among communities. This can be achieved by promoting local employment and procurement, providing training and skill development opportunities for local residents, and fostering economic opportunities that uplift marginalized groups.

Environmental sustainability: Prioritize environmentally friendly designs and technologies in infrastructure development. This includes integrating renewable energy sources, implementing energy-efficient systems, and employing sustainable construction practices. Emphasizing eco-friendly approaches helps minimize environmental harm and promotes long-term sustainability.

Resilience and adaptation: Incorporate climate resilience and adaptation measures into infrastructure projects. This involves considering future climate change impacts and designing infrastructure to withstand extreme weather events. By doing so, the infrastructure can continue to function effectively and protect communities, even in changing environmental conditions.

By implementing these measures, it is possible to ensure that the benefits of infrastructure development and innovation are distributed equitably, while minimizing harm to the environment and marginalized communities.

3.1 Examples

Community-Owned Renewable Energy Projects: In some places, communities are coming together to create their own renewable energy projects. They build things like solar panels or wind turbines that produce clean energy. What's great about these projects is that the local community, including groups that may have been left out before, gets to be a part of them. They own and manage the projects, which means they can keep the money and jobs within their community. It's a way to create clean energy and make sure everyone benefits.

Sustainable Transport Initiatives: Many cities are doing things to make transportation better for both people and the environment. One good example is Curitiba in Brazil. They have a special kind of bus system called Bus Rapid Transit (BRT). It's like a really fast and efficient bus system that's easy to use. The great thing about it is that it's affordable for everyone, including people in marginalized communities. This helps reduce traffic congestion and air pollution while making sure everyone can get around easily. Other initiatives like bike-sharing programs and making streets safer for walking are also being done to help the environment and make transportation fair for everyone.

These examples show how communities can take charge of clean energy projects and how cities can improve transportation in ways that benefit everyone and protect the environment. By working together, we can create infrastructure that is fair, sustainable, and good for the planet.

Some mining projects have caused problems for communities and the environment. For example, digging big holes in the ground can lead to trees being cut down, soil getting washed away, and water becoming polluted. This hurts plants, animals, and people's health.

When mines are built, people who live in those areas sometimes have to leave their homes. This can be really hard for them because they lose their houses, jobs, and things that

9

are important to their culture. It affects indigenous people and others who have been living there for a long time the most.

Another problem is that the money and jobs from mining don't always go to the local people. Big companies and rich investors often get most of the benefits, while the local communities suffer.

To make things better, we need to do mining in a way that doesn't harm the environment too much. We also need to respect the rights of the people who live there and make sure they get a fair share of the benefits. This means following rules to protect the environment, talking to the community, and making sure that everyone is treated fairly.

1. Conclusion

One possible way to balance the need for economic growth and innovation with the urgent need for climate action is to prioritize sustainable infrastructure development and low-carbon technologies. This could involve investing in renewable energy sources, such as wind and solar power, as well as promoting low-carbon transportation options, such as public transit and electric vehicles. Additionally, incorporating climate resilience measures into infrastructure planning and design can help ensure that infrastructure is able to withstand the impacts of climate change.

To ensure that the benefits of infrastructure development and innovation are distributed fairly, it is important to involve and engage all stakeholders, including local communities and marginalized groups, in the planning and decision-making process. Additionally, incorporating social and environmental impact assessments into infrastructure projects can help identify and mitigate any   potential negative impacts on the environment and marginalized communities. Finally, ensuring that infrastructure development is accompanied by social safety nets and access to education and job training can help ensure that the benefits of development are shared equitably.

Reduce, Reuse, Recycle, Renew

Is it too late to start from scratch?

Group members

1. Ankita Khanna
2. Mila Sazonova
3. Ankur Paul
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5. Fabian Neuber

Table of Contents

1. Introduction

1.1. Reduce, Reuse, Recycle, Renew - Is it too late to start from scratch?

We are all familiar with the call to action - *Reduce, Reuse, Recycle* but perhaps there is another dimension to consider - to *renew*. The existing systems, structures and processes, mostly belonging to a time of explosive growth - the industrial era - do not accommodate the modern advances made in the domain of sustainable development. In fact, their mere existence could pose a threat to life and the future of our planet.

While SDG 8 calls for Decent Work and Economic Growth and SDG 9 calls for Industry, Innovation and Infrastructure - the question arises, how can we best envision this so that these goals do not contradict the other SDGs which call for the protection of life under water, life on land and climate   action while ensuring clean water and sanitation for all? (United Nations, 2015)

This paper discusses the following questions within two distinct domains:

   A. Balancing Economic Growth and Sustainable Development:
   - How can cities reconcile the need for economic growth with the goal of creating sustainable, inclusive, and resilient communities?
   - How can urban areas minimise negative environmental impacts while promoting economic development and ensuring safety and inclusivity?
   B. Retrofitting vs. New Development:
   - Should resources be primarily allocated to retrofitting existing cities or developing new, purpose-built sustainable urban areas?
   - How do we balance upgrading existing infrastructure and creating new, sustainable communities from scratch, considering cost, efficiency, and community impact?

1.2 Outcomes of the Workshop:

This paper is the outcome of the SDG Workshop held at the OTH Amberg-Weiden Campus on the 31st of May 2023. Our team´s discussion sought to answer the aforementioned questions. We discussed how smart cities can be created - do we create entirely new cities or renew them or   redevelop them? We discussed a particular phenomenon in India of redeveloping and renewing existing spaces.

We also discussed how simply creating new buildings or spaces is not enough. And even if the masses think this is a good idea (like us students) then will or can the Governments do it? The answer we discovered was that yes, it is possible. This can be illustrated with the example of the Reinventing Cities Project. We understood that policy and political will is needed- which is more likely to have quicker results and at a larger scale.

We identified projects such as community gardens, rooftop farming as real-world examples of improving the existing infrastructure. The Reinventing Cities competition has several other projects that retrofit new cities. These two examples (from India and C40) directly answer the questions we raised before the workshop.

In summary, we sought to bring technology and sustainability together and for this, smart cities was the solution we identified. Following that, we discussed whether retrofitting and redeveloping is possible. In this paper we highlight these two examples.

2.   Understanding Sustainable Development Goals

A set of 17 interlinked objectives, the Sustainable Development Goals serve as guidelines to achieving peace and prosperity for people and our planet. They also serve as an urgent call to action for all countries to work in partnership towards eradicating poverty and other deprivations, while also improving health and education. It also calls for reduction in inequality and spurring economic growth - "all while tackling climate change and working to preserve our oceans and forests" (United Nations, 2015).

2.1 Sustainable Development Goal 11

Sustainable Development Goal 11 (SDG 11) is a part of United Nations' (UN) 2030 Agenda for Sustainable Development and calls for making cities and human settlements inclusive, safe, resilient and sustainable (United Nations, 2015).

Among the agendas of the SDG 11, this paper focuses on the call for sustainable urbanisation, reduction of environmental impact of cities as well as access to safe and inclusive green spaces. We also focus on implementation of policies for inclusion, resource efficiency and disaster risk reduction (United Nations, 2015).

2.2 Key Linkages between SDG 11 and other SDGs

There exist several intersections between SDG 11 and other SDGs. For example, SDG 11 calls for sustainable urban agriculture and access to nutritious food within cities. This coincides with SDG 2 - ending hunger, achieving food security, improved nutrition and sustainable agriculture. There is also   an overlap with SDG 9, which calls for industry, innovation and resilient infrastructure. With the focus on responsible consumption and production, which is the domain of SDG 12, there exists another linkage with SDG 11: resource efficiency focused policy and practice and the promotions of sustainable lifestyle within cities. SDG 15 is also considered since ensuring green spaces in urban areas can lead to conservation of biodiversity (United Nations, 2015).

Therefore, focussing on SDG 11 prompts a review and analysis of other interlinked SDGs and posits a far-reaching impact on our ever-modernising communities.

3. Urbanisation, Economic Growth and Sustainability

In 1800, only 2% of the world's population lived in urban areas, in the 1900s, this number rose to 15%. As of 2007, more than half of the world's population lives in urban areas. It is anticipated that this number will rise to 72% by 2050, which amounts to 6.3 billion individuals (Zhang, 2016).

Certainly, this astronomical rise in this number brings with it unique challenges. Within the globalising world, rapid urbanisation is leading to adverse problems of urban sprawl and environmental degradation (Zhang, 2016).

Urban sprawl, as a result of unfettered urban developmental limits, has led to encroachment within environmentally sensitive areas. An example of this is the city of Istanbul, which has seen 100%+ growth outside core districts over 25 years. (Zhang, 2016)
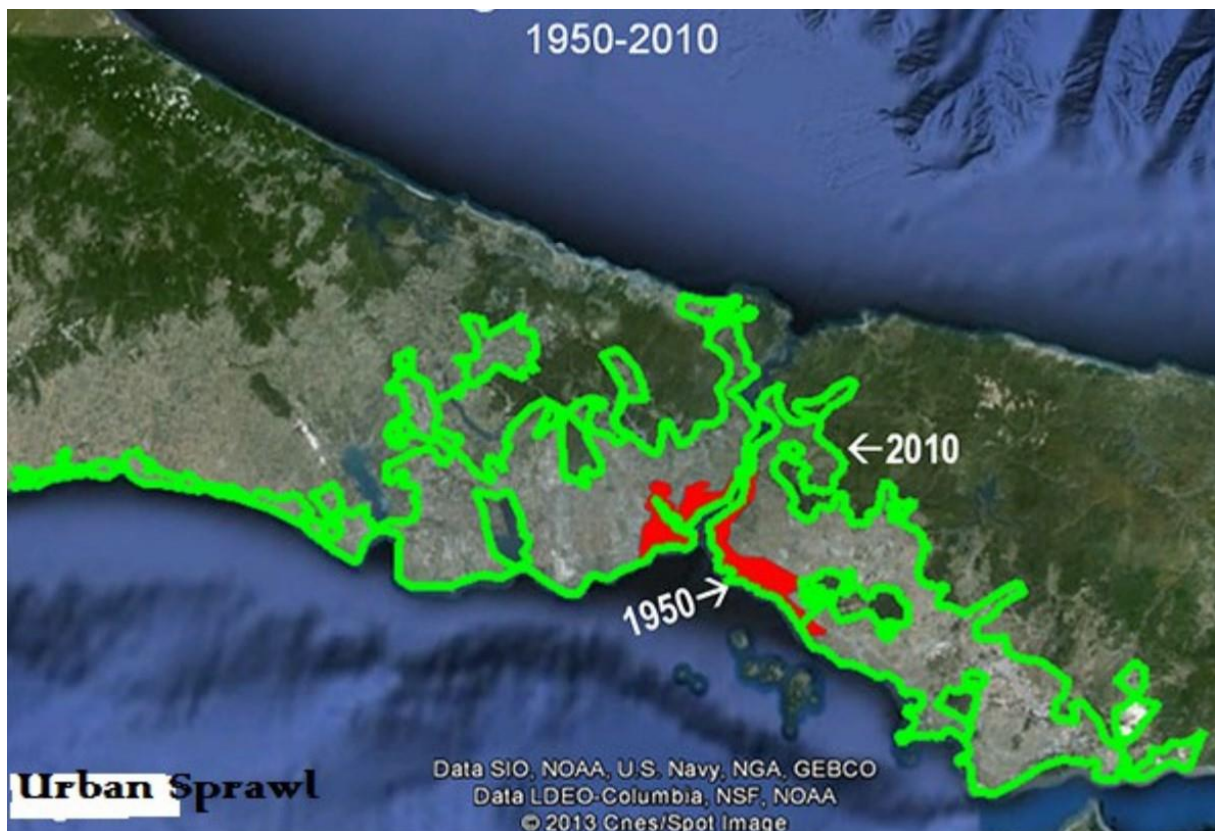

Figure 1: Istanbul urban sprawl 1950-2010. Source: http://www.newgeography.com/content/003468-dispersion-worlds-largest-urbanareas

This is not a coincidence, urban development benefits cities. Cities serve as nodes for innovation and communication - which is why cities are now the focus of decision-makers, who view the redevelopment of these cities necessary for economic and social development. (Madanipour, 2006; Urban Task Force,1999; 2005). This has also brought forth the discussion on how urban environments should be organised and what their "ecological footprint" should be (Carmona et al., 2010).

The focus of key stakeholders therefore lies in not only the economic value but also the social and environmental value. (Carmona et al., 2010)

3.2 What would Sustainable Cities look like?

The threat of climate change and technological development push forward the smart city as a potential solution (Viitanen & Kingston, 2014). Smart and sustainable cities promise the use of digital technologies for fostering efficiency, lower resource consumption and improved environmental quality while reducing the environmental impact (Evans et al., 2019). However, by virtue of inequity in accessibility, smart cities also have the potential to marginalise citizens and drive economic development that goes against the social and environmental goals (Evans et al., 2019). This is an especially perplexing challenge, considering the aforementioned intersection of SDG 11 with the other SDGs.

Smart cities are often pictured as networks of interconnected technological devices, generating data on its inhabitants (Viitanen & Kingston, 2014). However, this vision has its criticism, since the inherent involvement of economic growth within the envisioned smart-cities creates a contradiction
- economic growth is the cause of environmental degradation. An alternative is offered - economic degrowth (Moore, 2017; Alexander, 2015).

Some of the solutions explored in the following sections address these challenges.

3.3 Urban Planning and Policy for Sustainable Cities

The definitions of smart-city show a shift from technology focused concepts towards inclusivity, especially focusing citizen participation and policy focus on better resource management as well as better opportunities for the health and education of the citizens (Smith et al., 2018).

An example of political will and policy focus towards the development of smart-cities comes from India. In June 2015, the Ministry of Urban Development, Government of India announced the Smart- Cities Initiative (Ministry of Urban Development, Government of India). The two strategies laid out under this initiative are of retrofitting existing built-up areas or redeveloping existing areas with better infrastructure and conditions.

Figure 2: Cities selected under the Smart-Cities Mission. Source: https://www.mapsofindia.com/government-of-india/smart-cities-project.html

100 Indian cities have initiated over 7,700 projects so far, of which 5002 projects have been completed with utilisation of 51% of the earmarked funds available under this mission (Dashboard | Smartcities). Some of these projects include the restoration of 8 lakes in Coimbatore, installation of rainwater harvesting system and reformation of waste management system in Karavatti. Here, biodegradable waste is buried to produce manure, recyclable waste is processed, while the remaining waste is incinerated. In the Indian city of Prayaraj, a plastic-to-diesel conversion plant of capacity 2 MT has been installed. Mangaluru has started six roof-top solar power projects on Government buildings with an installed capacity of 393 KW. In the city of Salem, solar rooftop panels with a total capacity of 872 KW have been installed which will lower the cost of electricity by INR 6 million annually over the next 25 years (Aijaz, 2021).

Digital skilling and infrastructural support has also been provided by the Government of India under the National Urban Digital Mission while capacity-building is being fostered under the National Urban Learning Platform. Additionally, an index of measurement, viz, the Ease of Living Index has been computed for 111 cities. This index highlights the gaps in urban policies, planning and implementation initiatives. Likewise a Municipal Performance Index has been computed for these 111 cities, which shows the quality of urban governance (the performance of municipalities (Aijaz, 2021). The outcomes of policy initiatives in developing democracy such as India are evidence that top-down push, albeit decentralised, could serve as a catalyst for urban planning for smart-cities.

Additionally, the projects under the Smart-Cities mission do not just focus on urban infrastructure but also target several other SDGs while also attempting to create inclusive spaces open to individuals across financial strata.

Similarly, Reinventing Cities is a competition organised by Cities Climate Leadership Group (C40). C40 is a global network of mayors of the world's leading cities that are united in action to confront the climate crisis (*About C40*). A study of the winning projects of the Reinventing Cities competition found that smart-cities should offer higher living conditions, most importantly with mixed-use buildings with efficient use of private and public spaces (Sedova & Balakina). Of interest here is a winning project in Oslo that aims to transform a car park to housing with a high degree of communal space, promoting urban agriculture and biodiversity with a large greenhouse for herbs and vegetables (*Bygata Furuset | Winning Projects | Reinventing Cities*). The projects under this competition reinvent spaces to offer special public amenities and facilities, integrating the daily-lives of people with sustainable habits (Sedova & Balakina). Here again the policy and political will plays a significant role, the Reinventing Cities competition is spearheaded by C40 which is a global coalition of mayors. A project of this kind aims to not only create sustainable and technologically modern spaces but also targets self-reliance and self-sufficiency with the creation of green-spaces.

4. Conclusion

Urban planning and policy are crucial for the development and sustainability of smart-cities. The benefits of a well-planned smart-city are far-reaching and expansive. Political will, however, can catapult such initiatives to scale and the effects of this can then be exponential.

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OTH Amberg-Weiden

Bachelor students of International

Business Summer Semester 2023

Workshop on the Sustainable Development Goals (SDG)

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SDG Goal 4: Quality Education

How can we ensure safety&inclusion for institutions that
offer education?

Examples: Universities and schools, first contact between international
students

Sources can be found on the last page (page 3), while cited in text as following: (1), (2), …

Background:

While searching through the different Targets and indicators of SDG Goal number 4 „Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all" Target 4.a came to our attention. This states that countries should „Build […] facilities that […] provide safe, non- violent, inclusive and effective learning environments for all." (1) As a group this goal got us thinking how schools and universities can manage these problems in other countries while it still is a problem in our country. We therefore wondered how we can improve inclusion and ensure the safety of a good education and boost learning environment for all students.

Discussion:

When we first started our group discussion the first topic became immediate, as we have all already experienced culture clashes at our university. The problem of getting to know the campus as well as its students in a matter of days has had us all agree on being very hard. Differences between cultures, language barriers as well as finding the right direction to the right lecture hall made everyones first day on campus an issue. So why not introduce the students to a local and make sure that these first days will be as easy and comforting as possible. A huge solution to ensure that culture clashes will not appear as a stumbling block for international students can be initiating a mentor or buddy program where local students set new students from other countries in motion. This program would ensure an inclusive and more effective learning environment, as students will not have any problems finding their way in class and on campus. It was also mentioned during the early stages of the discussion that this solution works only from higher classes as students are not set to be able to communicate in English beforehand. At schools maybe an older student of university or higher class of the same country can help younger students out in the beginning.

Inclusion of Foreigners will always be a huge problem for countries, not only because of language barriers but also because locals will not always be open to speaking English in their home country. As there are big cities with very open minded people, such as Berlin or Munich, you will not always perceive such effect in smaller cities or villages of Germany. The group figured out that here 2 different examples for this circumstance come into play. As we had members of Asia, Sri Lanka or Czech Republic in our group it arose that for Weiden or Grafenwöhr the acceptance of speaking English in a conversation is much higher than in say more rural areas. The case is that outsiders will very often not have mid- to long-term contact to Germans and that they only have junctions to other foreign students. A solution to this problem are study groups after school with people from the same study program and organizing international parties to get a better grasp and understanding of other cultures and bring them together with their peers. As this solution was proposed a participant of the discussion mentioned that he/she has already tried the approach of organizing come-togethers at the OTH but it was sadly turned down, while students of the Czech town Pilsen have more chances to fuse with other external students with their so-called „Treffpunkt".

Summary:

To be able to have a good study environment one must be able to find their way to the library, which is as important as finding a place to live in the country of study. It therefore can do no harm to have a local set students up while also being in reach when problems arise. Not only will it have to be a goal to bring students of different countries together as globalization rises but more rural areas will need to be made aware that situations in which English is the go-to language will occur way more often in the future. We therefore must thrive for a more open-minded society and thus find a more suiting way of ensuring a better environment at schools and universities.

Solutions to SDG Target 4a „Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all":

-1 Introduce international students to locals and give them sort of a mentor/buddy

→ Helping to integrate foreign students to the local traditions/way of living, also finding their way around campus/school

→ Having someone to talk to when problems arise for example with the accomodation

-2 Build study groups not only for people with the same heritage but also with people of different countries to get a better connection

→ Plead to the OTH to organize more come-togethers for all students (e.g. like the Treffpunkt of Czech Republic university students)

-3 Raise awareness of the English language being the lingua franca in the 21st century

→ more open-minded society, securing a better environment at schools and around the homes.

Sources:

(1) https://sdgs.un.org/goals/goal4

Feedback to the SDG Space:

What we really enjoyed was coming together and discussing hot topics that have been on our minds recently. It was also a very good experience to meet students from Czech Republic and understanding how their country works and what similarities or differences they have compared to ours. As we shared our ideas, we really got to hear what things we can maybe change and help our university become a better place in the future. For example hearing about the „Treffpunkt" that they have might help us to convince our university to organize more come-togethers. Furthermore, it was really helpful to exchange all the different opinions and questions that we had to deal with throughout the
discussion. Also, the international workshop with students of our university and, as mentioned

above, with the students from Czech Republic, it was possible for us to see how other people close to our

age and from different countries came up with different ideas, solutions and arguments. Each person had a different approach and different experiences that they shared within the group discussion. This helped everyone to deeper discuss the conflicts within the SDGs and also give a new perspective about the questions and the solutions derived from them. Lastly, the most important thing to us was,   that no matter how much we discussed or differentiated in our opinions and arguments, in the end we found solutions together as a group where no opinion was judged but rather valued and respecte

ZÁPADOČESKÁ UNIVERZITA V PLZNI

FAKULTA EKONOMICKÁ

Workshop in Weiden

Conflicts between Sustainable Development Goals

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Pilsen 2023

Content

Introduction

Sustainable development goals are becoming a more widely discussed topic and countries are trying to achieve at least part of them gradually. Meeting these goals is very important for our planet. Without this, it would probably not be possible to maintain the quality of life for future generations.

The aim of this thesis is to find conflicts between the selected objectives, to develop two questions on them, to consult them in a workshop in Weiden and to try to find solutions to the conflicts.

First, the 17 Sustainable Development will be introduced and selected goals will be further specified. The selected goals are goal 11, which deals with sustainable cities and communities and the second goal 8, which relates to decent work and economic growth. The next part will be focused on the main aim of the project, that is, the discussion of the questions (conflicts) created. The discussion took place at the German university OTH Amberg-Weiden and was part of the SDG Transformation SPACE project.

At the end, opinions/solutions to the questions will be written down and a final evaluation will be made.

1 Sustainable development goals

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the 17 Sustainable Development Goals (SDGs) (United Nation, n.d.a.), which are an urgent call for action by all countries - developed and developing - in a global partnership. They recognize that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

The SDGs build on decades of work by countries and the UN, including the UN Department of Economic and Social Affairs.

1.1 SDG 8 – Decent work and economic growth

Progress towards achieving SDG8 has been challenging and the world is far from reaching most of the targets. The lingering effects of COVID-19, cost-of-living crises, trade tensions, uncertain monetary policy paths, rising debts in developing countries, and the war in Ukraine can each significantly set back global economic growth. Combined, these crises are placing the global economy under a serious threat. Global real GDP per capita is forecast to slow down in 2023, putting at risk not just employment and income but also advances in equitable pay for women and decent work for young people. Achieving SDG8 will require a wholesale reform of our morally bankrupt financial system in order to tackle rising debts, economic uncertainties and trade tensions, while promoting equitable pay and decent work for young people (United nations, n.d.a).

Targets and indicatiors for SDG

8: 8.1
Sustain per capita economic growth in accordance with national circumstances and, in particular,
at least 7 per cent gross domestic product growth per annum in the least developed countries

8.2
Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors

8.3
Promote development-oriented policies that support productive activities, decent job

creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services

8.4
Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with

the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead.

8.5
By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value

8.6
By 2020, substantially reduce the proportion of youth not in employment, education or training

8.7
Take immediate and effective measures to eradicate forced labour, end modern slavery and human trafficking and secure the prohibition and elimination of the worst forms of child labour, including recruitment and use of child soldiers, and by 2025 end child labour in all its forms

8.8
Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment

8.9
By 2030, devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture and products

8.10
Strengthen the capacity of domestic financial institutions to encourage and expand access to banking, insurance and financial services for all

8.a
Increase Aid for Trade support for developing countries, in particular least developed countries,   including through the Enhanced Integrated Framework for Trade-Related

Technical Assistance to Least Developed Countries

8.b
By 2020, develop and operationalize a global strategy for youth employment and implement the Global Jobs Pact of the International Labour Organization

(United Nations, n.d.a)

1.2 SDG 11 – Sustainable cities and communities

One of the reason why this goal was chosen is because of the possible use of the results in the future for a thesis. Another reason is that by 2050, two-third of the world's population is expected to live in cities, so taking a closer look at this topic is very important and interesting for us. In the future, cities are also expected to generate 70 per cent of the world's GDP, providing economic growth and opportunities.

Goal 11 should ensure cities and human settlements inclusive, safe, resilient, and sustainable. There are several main issues that relate to cities. In the peripheral parts of cities there are often so-called slums where people live in very poor conditions. Around the world, one billion people live in these poor dwellings. Many countries are facing an increasing number of local disasters. Between 2015 and 2021, the number almost doubled (from 51 to 98 countries with disasters). Another major problem is that cities produce significant amounts of municipal waste and there is an increasing trend. 82 percent of waste is collected and only 55 percent is managed in controlled facilities. Cities produce many air pollutants and 99% of urban residents breathe polluted air. The last major problem is the availability of public transport. In sub-Saharan Africa less than 1/3 of the inhabitants have an convenient access to public transport. (United Nations, n.d.a)

Targets and indication for SDG 11:
Almost all targets should be met by 2030
11.1 For all ensure adequate, safe and affordable housing, access to basic services and upgrading of slums.
11.2 Providing access to affordable, safe and sustainable transport for all, improving road safety and paying particular attention to those in vulnerable situations such as children, the elderly, women and people with disabilities.
11.3 Strengthen inclusive and sustainable urbanisation and implement sustainable planning and management in all countries.
11.4 Continuously increase efforts to protect and preserve the world's cultural and natural heritage.
11.5 Reduce the number of deaths and the number of people who are medically affected due to disasters, especially water disasters, and focus on the poor and people in vulnerable situations.

11.6	Reduce the negative impact on the environment (per capita) and pay special attention to air quality and waste

11.7	With a greater focus on more vulnerable populations (women and children, older person, people with disabilities) provide access to safe, inclusive, green, accessible public spaces.

11.a	Using national and regional planning to promote positive links between the economy, social and environment in urban peri-urban and rural areas.

11.b	By 2020, ensure that more cities participate in implementing integrated policies, and plan towards inclusion, resource efficiency, mitigation, climate change adaptation and disaster resilience.

11.c	Support less developed countries financially, with technical assistance on sustainable buildings and the use of local materials for resilient building construction.
(United Nations, n.d.a)

1.3   SDG 13 – Climate action

The world is on the brink of a climate catastrophe and current actions and plans to address the crisis are insufficient. Without transformative action starting now and within this decade to reduce greenhouse gas emissions deeply and rapidly in all sectors, the 1.5°C target will be at risk and with it the lives of more than 3 billion people. Failure to act leads to intensifying heatwaves, droughts, flooding, wildfires, sea-level rise, and famines. Emissions should already be decreasing now and will need to be cut almost by half by 2030 - a mere seven years from now. To combat climate change and its impacts by 2030, urgent and transformative action is needed to meet the commitments under the Paris Agreement across mitigation and adaptation efforts (United nation.
n. d.a.).

Targets and indication for SDG 13:

13.1
Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all
countries

13.2
Integrate climate change measures into national policies, strategies and planning

13.3
Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning
Indicators

13.a
Implement the commitment undertaken by developed-country parties to the United Nations Framework Convention on Climate Change to a goal of mobilizing jointly $100

billion annually by 2020 from all sources to address the needs of developing countries in the context of meaningful mitigation actions and transparency on implementation and fully operationalize the Green Climate Fund through its capitalization as soon as possible.

13.b
Promote mechanisms for raising capacity for effective climate change-related planning and management in least developed countries and small island developing States, including focusing on women, youth and local and marginalized communities
(United nations, n. d. a.)

2   SDG Transformation SPACE

The main objective of the SDG Transformation SPACE project is to discuss selected SDG goals. Students from the University of West Bohemia and students from the German university OTH Amberg-Weiden participated in the project. From the German side, the project involved students who study the subject in English, so it was not only German students, but also students from other countries, for example. India, Iran, Russia. The discussion of the topics was thus more interesting than if only European students had participated.

There was no set goal to solve for this year, so everyone could choose the one that was most suitable for them and create question on it. The program was divided into two parts - morning and afternoon. The two questions were discussed for 30 minutes at a time in each group and participants were free to move between groups.

2.1   Our two questions

Our two questions worked with goal number 11 – sustainable cities and communities, with goal 8
– decent work and economic growth and goal 13 – climate

action. First question was:

Do you think it is possible to ensure that the towns/cities does not expand and thus damage the surrounding landscape?

The conflict is between goal 11 - sustainable cities and communities, and goal 15 life on earth. The problem is that a lot of people move to cities for better jobs, better paid possition, better living conditions and so on, and these people need somewhere to live. Cities build new houses, buildings, districts and thus use the natural environment around the city (fields, meadows, forests,...). They reduce space where nature is. But it is not just about people, companies are also expanding their activities, building new halls, warehouses, offices and use land. For a simple summary - cities are expanding and thereby using valuable land.

Our second question was:

How to reduce the carbon footprint without increasing unemployment and thereby affecting economic growth?

This question was related to SDG 8 (Decent work and economic growth) and SDG 13 (Climate action). The conflict between these can arise when pursuing economic growth without adequately considering enviromental sustainability, e. g. Deforastation, intensive industrialisation and etc.

For starting discussion, we prepared good and bad examples.

Good example: Brownfields (first question)

Brownfields it is an area of land or a building in a city that has been used for industrial purposes in the past and where a new building can be built (Cambridge Dictionary, n.d.). In many parts of the world, industrial and mining activity has left a significant mark on the structure of regions and industrial cities. Many businesses have closed down, making the locations problem areas that can also be contaminated in various ways. Nowadays, cities are trying to find solutions to help prevent urban sprawl using old unused buildings through remediation and redevelopment → brownfield use.
An old chemical factory building near the city of Denver, Colorado can be used as an example. Since 18 century, these facilities have polluted much of local area and soil was polluted as well. Extensive soil cleaning and also ground water monitoring have to be done. Now new city buildings and functions operate in this area. This project call Central Platte Campus project won several awards for environmental clean-up and land redevelopment (StudySmarter, n.d.).

Bad example: New capital city of Indonesia (first question)
New capital city in Indonesia will be located in eastern island Borneo. The authorities promise a sustainable forest metropolis that puts the environment fist and the aim is to be carbon neutral by 2045 (forests in the city, parks, renewable energy, smart waste solution,…). Environmentalist strongly criticised this project because it will have negation impact on the Indonesia landscape. A significant part of tropical rain forest had to be cut down, they will reduce the natural environment of endangered animal and forcing the local inhabitants to leave the area. (iRozhlas, 2023)
From our point of view, it is the really bad example how of how to build new city even if it should be environmentally friendly.

Bad example: The Appalachia, coal mining heritage (second question)

The Appalachia region in United States has faced intensively rough time in economic challenges as the demand of coal has declined during the time. Mine closures without supporting displaced workers have led to unemployment, poverty, and economic declined in many communities (Bowen, E. et al., 2020).

Good example: Germany's Energy policies (second question)

The energy transition in Germany known as the "Energiewende", is the country's planned transition from a clear dominance of coal, oil and nuclear to a low-carbon and nuclear-free economy based on the utilization of renewable sources. The ambitious goal is to cut CO_2 emissions by 80% (International Trade admistation, 2022) and increase the share of renewable energy in total energy consumption to 60% by 2050. Investments in offshore wind, photovoltaics, grid expansion and energy storage projects will be necessary as well as the implementation of a new, smart energy infrastructure that can balance the fluctuating supply of renewable sources. Energy efficiency will play a central role. For decades, Germany has been the global pioneer in applying renewable energy and environmental technologies.

Ideas that were mentioned during the discussion:
- convenient to move to cities → because of studies, work, money → people could work, study from home (online), if they live in the villages they could stay there and not move to cities,
- the state/government could introduce some policies to prevent cities from expanding, land-use restrictions,
- when it comes to urban sprawl, the government could introduce rules to ensure that buildings are built as green, sustainable (green roofs, facades,...)
- building taller buildings, block of flats → they use less space and more people can live there,
  - example of Singapore – there are tall buildings and it's in harmony with nature,
- provide better services (hospital, hospitality, etc.) to keep people in the villages, small cities or move there,
- quality and cheap public transport, people could commute even from more distant areas,
- for more sustainable and green cities, shared outdoor natural spaces could be introduced between houses, inside apartment blocks, where people could walk or relax. At the same time, better air quality would be achieved through vegetation,
- urban agriculture places could also be built in cities,

- one option would be to reduce the population somewhat but that is against the ethical rules.
- If the company wants to keep the workers, they should reteach them into another field
- Policy integration

Conclusion

Although some actions can be taken, it is not possible to prevent cities expansion.

We all agreed that the use of brownfields is very useful, and it is one of the ways, even if it is sometimes expensive. Through various government policies and proposals for new buildings, nature could be more respected and preserved. Building block houses is also an option. If they were modern and had more greenery (e.g., balconies with greenery, terraces, etc.), people wouldn't mind living in them so much and this would save space.

During this discussion, the issue of plastics and waste produced by cities was also discussed. The problem is that there are many types of plastic, it is difficult to recycle, it is very expensive and time-consuming, and the return on recycling is not that great. It would also be important to organize school trips to landfill so that they can see for themselves what it looks like and change their behaviour towards throwing things away.

In almost all the questions that were discussed at the workshop we agreed that education is the most important. Without education it will be difficult to meet the SDGs.

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Strategies for Reducing Food Waste: Changing Consumer Behavior and Minimizing Post-Harvest Losses in Small-Scale Food Production

Seminar paper: **SDG Transformation SPACE. 31.05.2023**

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Abstract

Food waste is a significant global challenge with far-reaching social, economic, and environmental implications. This seminar paper explores effective strategies for reducing food waste by focusing on two key areas: changing consumer behavior and minimizing post-harvest losses in small-scale food production. By examining existing research and best practices, this paper offers insights into practical solutions and potential collaborations to address this pressing issue.

Introduction

Food waste is a critical global issue that requires urgent attention and action. Globally, approximately one-third of all food produced amounting to approximately 1.3 billion tons annually goes to waste, resulting in significant economic, social, and environmental consequences. This wastage not only squanders valuable resources such as water, land, and energy but also exacerbates food insecurity and contributes to greenhouse gas emissions.

Reducing food waste not only contributes to sustainable development but also aligns with the principles of the Sustainable Development Goals (SDGs) set by the United Nations.

The SDGs provide a comprehensive framework for addressing various global challenges, including hunger, poverty, and responsible consumption and production. Of particular relevance to food waste reduction are SDG 12 (Responsible Consumption and Production) and SDG 2 (Zero Hunger). SDG 12 aims to ensure sustainable consumption and production patterns, including a specific target (SDG 12.3) to halve per capita global food waste at the retail and consumer levels. SDG 2 focuses on achieving food security, improving nutrition, and promoting sustainable agriculture.

In this seminar paper, we delve into two crucial aspects related to food waste: changing consumer behavior and minimizing post-harvest losses in small-scale food production. By addressing these interconnected areas, we can make significant progress in achieving the targets set by the SDGs, contributing to a more sustainable and equitable world.

The objective of this seminar paper is to explore effective strategies for reducing food waste, considering the SDGs, and proposing solutions that can be implemented at various levels of the food system. By examining the challenges, analyzing best practices, and fostering collaborations, we aim to provide practical insights and recommendations for policymakers, researchers, practitioners, and individuals committed to combating food waste.

Through a multidimensional approach and alignment with the SDGs, we can work together towards a more sustainable and efficient food system, ensuring food security, promoting responsible consumption, and achieving the broader vision of sustainable development.

During the seminar, the participants identified two crucial questions related to food waste reduction: how to change consumer behavior and minimize post-harvest losses in small-scale food production. This section introduces the background and significance of these questions, highlighting the impact of food waste on food security, sustainability, and resource utilization. The objectives of the seminar paper are clarified, focusing on providing comprehensive answers and solutions to the identified questions.

1. SDGs' Conflicts and challenges

Here are where conflicts or challenges related to food waste reduction may arise:

SDG 12: Responsible Consumption and Production

➜ **Target 12.3:** By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.

Conflicts and challenges:

·   Consumer Behavior: Changing consumer behavior and reducing food waste at the retail and consumer levels can be challenging due to habits, cultural practices, and consumer expectations around food quality and appearance. Educating and raising awareness among consumers to minimize food waste while ensuring food safety and quality is a delicate balance.

·   Supply Chain Complexity: Reducing food losses and waste along the production and supply
chains involves multiple stakeholders, including farmers, producers, processors, distributors, retailers, and consumers. Coordinating efforts, improving infrastructure, and implementing effective waste management practices throughout these complex supply chains can be challenging, especially in regions with limited resources and infrastructure.

SDG 2: Zero Hunger

➜ **Target 2.3:** By 2030, double the agricultural productivity and incomes of small-scale food producers, particularly women, indigenous peoples, family farmers, and fishers, including through secure and equal access to land, other productive resources and inputs, knowledge, financial services, markets, and opportunities for value addition and non-farm employment.

Conflicts and challenges:

Post-Harvest Losses: Food waste can occur due to inadequate storage facilities, limited access to post-harvest technologies, and insufficient training or knowledge among small-scale food producers. Addressing these challenges requires investment in infrastructure, access to appropriate technologies, and capacity building to minimize

post-harvest losses and increase the efficiency of small-scale food production.

SDG 13: Climate Action

➔ **Target 13.3**: Improve education, awareness-raising, and human and institutional capacity on climate change mitigation, adaptation, impact reduction, and early warning.

Conflicts and challenges:

Methane Emissions: Food waste, when disposed of in landfills, contributes to methane emissions, a potent greenhouse gas. The challenge lies in effectively managing organic waste and implementing proper waste treatment and disposal methods that reduce methane emissions. Building awareness, implementing waste management infrastructure, and promoting sustainable waste management practices are essential for addressing this conflict.

2. Discussion

Question 1: How can we effectively change consumer behavior to reduce food waste while ensuring food safety and quality?

Changing consumer behavior is a crucial aspect of reducing food waste. Here are some potential solutions:

1.   Public Awareness and Education: Implement comprehensive public awareness campaigns to educate consumers about the environmental and social impacts of food waste. Promote the importance of responsible consumption, smart shopping, meal planning, and proper food storage techniques.
2.   Information and Labels: Improve food labeling to include clear information on expiration dates, storage instructions, and portion sizes. Encourage the use of standardized food labeling systems to minimize confusion and enhance consumer decision-making.
3.   Collaboration with Retailers and Food Industry: Engage retailers, restaurants, and food manufacturers in initiatives to reduce food waste. Encourage partnerships to implement strategies such as offering discounts on near-expiry or surplus food, donating excess food to food banks or charities, and promoting smaller portion sizes.
4.   Incentives and Rewards: Implement reward systems or incentives for consumers who actively participate in reducing food waste. This can include loyalty programs, discounts on future purchases, or community recognition for responsible food consumption practices.

Question 2: How can we minimize post-harvest losses and food waste in small-scale food production while enhancing agricultural productivity and incomes?

Minimizing post-harvest losses and reducing food waste in small-scale food production involves addressing several challenges. Here are potential solutions:

1.   Infrastructure Development: Invest in appropriate storage and transportation infrastructure, including cold storage facilities and efficient transport

systems, to minimize post-harvest losses. Improve access to suitable packaging materials and technologies that preserve the quality and extend the shelf life of agricultural produce.

Capacity Building and Knowledge Transfer: Provide training, workshops, and knowledge-sharing platforms for small-scale food producers on best practices for post- harvest handling, storage, and preservation techniques. Promote the adoption of modern agricultural technologies and practices that help reduce waste and enhance productivity.

2. Access to Markets and Value Addition: Facilitate access to local and regional markets, enhance market linkages, and support value addition activities for small-scale food producers. By diversifying product offerings, implementing proper branding and packaging, and promoting direct marketing channels, farmers can reduce losses and capture greater value for their produce.

3. Financial and Technical Support: Offer financial assistance, grants, and loans to small- scale food producers to invest in infrastructure, acquire appropriate technologies, and implement post-harvest management strategies. Foster collaborations between small-scale producers, research institutions, and agricultural extension services to provide technical support and guidance.

It is crucial to tailor these solutions to the specific contexts and challenges faced by different regions and communities. A multi-stakeholder approach involving governments, agricultural organizations, research institutions, and community engagement is essential for implementing these solutions effectively.

3. Changing Consumer Behavior to Reduce Food Waste

3.1 Understanding Consumer Behavior:
Consumer behavior plays a pivotal role in food waste generation. Various factors influence consumer habits, including societal norms, cultural practices, convenience, and food marketing. Understanding the underlying drivers of consumer behavior is essential for designing effective interventions.

3.2 Strategies for Changing Consumer Behavior:
To encourage consumers to adopt behaviors that reduce food waste, several strategies can be employed. Public awareness campaigns can educate individuals about the consequences of food waste and promote responsible consumption practices. Information and labeling improvements, such as clearer expiration dates and portion guidance, can empower consumers to make informed choices. Incentives and rewards, such as loyalty programs or discounts, can motivate consumers to actively participate in waste reduction efforts. Collaboration with retailers and the food industry is also crucial, as they can implement initiatives like surplus food redistribution or donation programs, and promote responsible consumption practices.

4. Minimizing Post-Harvest Losses and Food Waste in Small-Scale Food Production

4.1 Challenges in Small-Scale Food Production:
Small-scale food producers face unique challenges in minimizing post-harvest losses. Limited infrastructure, including inadequate storage facilities, transportation networks, and processing centers, often result in significant food waste. Additionally, small-scale farmers may lack resources and knowledge to adopt efficient post-harvest

handling techniques, restrict access to markets, and lack value addition opportunities.

4.2 Strategies for Minimizing Post-Harvest Losses:
Addressing post-harvest losses requires a multi-faceted approach that involves infrastructure development, capacity building, market access, and financial and technical support. Investing in appropriate storage facilities, transportation networks, and processing centers is critical to reduce losses during handling and transportation. Capacity building programs can provide small-scale farmers with training and knowledge transfer on post-harvest management techniques. Facilitating access to markets, promoting local and regional collaborations, and encouraging value addition activities can enhance small-scale farmers' incomes while minimizing waste. Financial and technical support, including grants and guidance, can further empower small-scale food producers to adopt efficient post-harvest practices.

5. Case Studies and Best Practices

This section presents case studies and best practices from around the world that have successfully addressed food waste at the consumer level and in small-scale food production. Examples include public awareness campaigns that have effectively changed consumer behavior, initiatives promoting responsible consumption practices, and successful models of infrastructure development, capacity building, and market access in small-scale food production. These case studies highlight key strategies, outcomes, and lessons learned, providing valuable insights for designing future interventions.

6. Synergies and Potential Collaborations

Recognizing the interdependencies between changing consumer behavior and minimizing post-harvest losses, this section explores the potential synergies and collaborations. Efforts to reduce food waste can be strengthened through partnerships between consumers, farmers, retailers, and policymakers. Sharing knowledge, aligning objectives, and coordinating efforts can amplify the impact of individual initiatives and promote a more comprehensive and coordinated approach towards achieving sustainable food systems.

Conclusion

In conclusion, reducing food waste requires a multi-faceted approach that addresses both consumer behavior and post-harvest losses. Strategies to change consumer behavior involve raising awareness, improving information and incentives, and fostering collaborations. Simultaneously, minimizing post- harvest losses necessitates investments in infrastructure, capacity building, market access, and support for small-scale food producers. By implementing these strategies and promoting synergistic collaborations, we can move closer to achieving a more sustainable and efficient food system with significantly reduced food waste.

The seminar participants engaged in a comprehensive discussion on the two questions related to reducing food waste while considering the principles of the Sustainable Development Goals (SDGs). The strategies proposed for changing consumer behavior and minimizing post-harvest losses align with several SDGs, particularly SDG 12 (Responsible Consumption and Production) and SDG 2 (Zero Hunger).

By implementing the solutions discussed, such as public awareness campaigns, improved information and incentives for consumers, infrastructure development, capacity building, and market access support for small-scale food producers, we can make substantial progress in achieving SDG 12.3 (Halve Per Capita Global Food Waste at the Retail and Consumer Levels) and SDG 2.3 (Double the Agricultural Productivity and Incomes of Small-Scale Food Producers).

Furthermore, the seminar participants highlighted the importance of collaboration among consumers, farmers, retailers, and policymakers, emphasizing the need for multi-stakeholder partnerships to address food waste comprehensively. This collaborative approach aligns with the spirit of SDG 17 (Partnerships for the Goals), which underscores the significance of global cooperation to achieve sustainable development objectives.

By combining efforts to change consumer behavior and minimize post-harvest losses, we can contribute to a more sustainable and efficient food system, support food security, promote responsible consumption practices, and work towards the broader vision of the SDGs.

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