100 Global Innovative Sustainability Projects: Evaluation and Implications for Entrepreneurship Education

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Abstract: New mindsets and innovative thinking (Moon. 2013, 2014) are needed to deliver on everything from good health and well-being to affordable and clean energy. This paper reviews the latest trends to tackling pressing social and environmental problems by examining a sample of 100 innovative projects across the globe. The data set of 100 projects allows for evaluation by both quantitative and qualitative methods. Thus the projects are evaluated on their innovation contribution but also on their scalability going forward. Implications for the resources needed to ensure such projects continue to be developed across the globe are discussed; and the green skills needed to ensure their success. The projects cover a range of applications including Buildings, Food, Energy, Transportation but also Resource and Education sectors. The Circular Economy concept is used to identify commonalities between the projects. And key challenges in the development and deployment of the solutions are highlighted. The key research question is: what strategic policy support is needed within HEIs to ensure the development of the necessary multi collaborative and cross disciplinary mind-sets and skills that such projects require.

Keywords: innovation, sustainability, entrepreneurship, education, UN SDGs

1. Introduction

In September 2015, world leaders agreed the 17 Sustainable Development Goals (SDGs) that are heralded as one of the chief global tools for ending poverty, fighting injustice and tackling climate change. According to Kingo (Sustainia, 2016), Executive Director UN Global Compact, cities and governments around the world have been embracing this new agenda; and businesses in particular have unprecedented opportunities to find new markets. What then has been the impact of the UN SDGs? Has implementing the UN SDGs led to a new era of innovation and entrepreneurship? This paper seeks to further our understanding of this impact by reviewing 100 projects from across the globe that have been identified as at least partially tackling one or more of the SDGs in practice. The methodology to achieve this review is based on mixed methods. The 100 projects are reviewed quantitatively to ascertain their scope and focus overall; and qualitative analysis is undertaken to surface and explore some of the assumptions being made about the efficacy of the UN SDGs in bringing about the changes necessary for poverty, injustice and climate change to be 'tackled' by 2030.

2. Literature

There is a burgeoning literature on entrepreneurial ecosystems (e.g. USE, 2017; cf. note 3 below on Audretsch, 2017) and this paper adds to this by connecting eco-entrepreneurship to ecosystems development (Moon, 2017). Thus, there is a need to identify, foster and support eco and social entrepreneurship skills to tackle the UN SDGs yet most Higher Education Institutions (HEIs) provide scant education in this regard; and lack the transdisciplinary collaborations necessary to tackle complex societal and environmental problems (Mader & Rammell, 2014). HEIs are significant contributors to entrepreneurial ecosystems yet there is little policy support to enable educators to provide the opportunities for creative thinking, compassion and empathy to develop the mindsets and skills required for such innovative thinking to emerge. This is partly due to the nature of HEIs i.e. they are institutions with bureaucratic structures and often outdated courses. Most HEIs have five-yearly curriculum planning or review cycles; and courses tend to be designed by academics with little or no industry experience; especially lacking are the involvement of eco and social entrepreneurs. There is also a lack of professional training and development of existing academics to help develop the sustainability mindset needed to design courses to develop the green skills needed for the green economy (see UE4SD., 2014 below). Specific research questions that thus be posed: (1) what is the link between entrepreneurship education and innovative sustainable projects? (2) how can HEIs adapt to support entrepreneurial ecosystems development in this regard.

3. Methodology

The main data set used for this analysis is taken from Sustainia (2014, 2015, 2016). Several thousand projects have been submitted and reviewed by experts (see notes 1 & 2 below) and overall short-lists of 100 per year produced of the most innovative and inspiring projects across the globe. Evaluation criteria for short-listing the projects were: that the solution is readily available; scalable; has positive environmental impact; is financially

viable; and will improve quality of life. This paper will review key trends identified across the three years; review the latest 100 projects submitted for 2016 by sector; and discuss implications of the key trends and selected projects for enterprise and entrepreneurship education today. Three research questions are posed: (1) Are the UN SDGs more than a marketing tool? (2) Are the UN SDGs inspiring sustainable innovation projects? (3) What are the practical implications for HEIs? Table 1 below provides a summary of the key trends for projects submitted across three years and provides a snapshot of which global issues have been receiving the most attention from the 'experts'.

Table 1: Key Sustainia trends 2014-2016

Ten sectors	Key trends 2014	Key trends 2015	Key trends 2016
Buildings	More efficient buildings	Climate resilience; Creating value from local resources	
Food	Water efficiency	Creating value from local resources	
Fashion	Responsible Supply Chains	Access over ownership	Making profit from unlikely materials
Transportation		Access over ownership	
IT		Digital mapping	People powered data for better infrastructure
Education		Community action	
Energy			Affordable and clean energy
Health		Business at the base of the pyramid	Cities as health promoters
Cities	Data analytics; Rethinking consumption		Cities as health promoters
Resources	Circular economy	Incentivising circularity	

The 100 short-listed projects each year are divided into ten thematic sectors. Each sector has ten projects; thus it is not possible from the short-lists to discern that one sector has been receiving more attention than another. However, certain key trends have been identified by the Sustainia experts; and the author of this paper has referred to the trends and sectors in the analysis below.

4. Key trends 2014

According to Sustainia (2014), 25 solutions embodied the circular economy making this the top trend. Solutions appeared in the fashion and resources sectors in particular; with harmful materials switched for less harmful materials; and use of waste to create new products. Table 2 produced by the author of this paper identifies example short-listed solutions by key trend and sector.

16 solutions addressed water scarcity across the globe. This includes producing products with less water used in the process; and also recycling water post-production to minimise loss. 14 solutions represented improvements to supply chains including removing conflict materials from mobile phones; and partnering with fair trade organisations to improve labour conditions. 13 solutions depict innovative business models such as leasing services rather than owning products. 13 solutions focussed on data analytics from use of Big Data in the energy industry to smart lighting, smart parking, and smart meters. 12 solutions feature smart building solutions including better use of solar panels and dynamic windows that dim glass.

Table 2: Sustainia solutions by key trend and sector 2014

Key trend and sector	Example solutions
Circular economy	
Resources	Carbon negative plastic
	Biodegradable Plastic from waste materials
Fashion	Leasing Jeans for a circular fashion industry
IT	Automated e-waste Recycling Kiosk
Health	Carpets that clean the air for better indoor climates
Water scarcity	
Fashion	Replacing cotton with low impact flax fibre.
Food	Growing Trees in deserts with minimal water use

Key trend and sector	Example solutions
	Drip Irrigation maximises crop yields for smallholder farmers
IT	Smart water leak detection for agriculture
Resources	Shower system recycles and cleans water
Supply chain	
IT	The ethical smartphone
Fashion	Water recycling in denim production
	Transparency and real time data for buyers
Resources	Construction products made from natural waste
Transportation	Refrigerated Shipping cuts energy consumption and food waste
Rethinking consumption	
Transportation	Ridesharing for people powered transportation
Cities	Mobilising behaviour change for a zero waste city
	Providing incentives for recycling in low-income communities
Fashion	Global take-back system for textiles
Resources	Biodegradable diapers (nappies) reducing waste
Data analytics	
Cities	Citywide parking sensors for lowering congestion
	Communication platform for integrating Renewable Energy
IT	Software combatting energy inefficiency in buildings
Energy	Saving Energy through Data and Cloud software
Transportation	IT system for fuel-efficient railways
Efficient buildings	
Cities	Energy savings finance the switch to LED lighting
Health	Designing hospitals to maximise daylight
Buildings	Mirror enhanced skylight with no upfront costs
	Dynamic windows dim glass and save energy
	Refurbishing to create energy positive buildings

5. Key trends 2015

According to Sustainia (2015), 23 solutions involved business at the base of the pyramid i.e. companies and social enterprises focussing on new market-based approaches to meeting the needs of the poor. Table 3 lists example short-listed solutions by key trend and sector. 21 solutions focussed on creating value from local resources including redistributing unexpired pharmaceuticals; and sharing of 3-D printers. 20 solutions focussed on climate resilience such as stronger buildings in developing countries and innovative disaster relief techniques. 19 solutions focused on incentivising the circular economy such as leasing out children's clothing and discounts for taking back worn out clothing. Additional insights have been gained from solutions involving digital mapping; and providing access to services rather than ownership.

Table 3: Sustainia solutions by key trend and sector 2015.

Key trend and sector	Example solutions
Business at the Base of the Pyramid	
Health	Solar powered hearing aids with open sourced design
	Cooking with ingots to combat iron deficiency
Energy	Micro-Financed Off-Grid Solar Power
Food	Micro-Insurance for protecting smallholders
	Solar powered drip irrigation for smallholders
IT	Affordable Mobile Networks for Remote Areas
	Voice and SMS-based agricultural tips to farmers
Education	Improving Livelihoods through Entrepreneurship
	Mobile solar computer classrooms
Resources	Turning plastic waste into a currency

Key trend and sector	Example solutions
Incentivising Circularity	
Resources	Entirely plant-based beverage carton
	Reusing waste paint
Fashion	Yarn from the world's waste streams
	Circular workwear production
IT	Climate positive data-centre.
Energy	Algae based fuel from waste CO_2
Community Action	
Education	Learning to value resources by swapping toys
IT	Creating access to 3-D printers through sharing
Health	Peer to peer redistribution of surplus medication
Cities	Reducing energy consumption with cool rooftops
Climate Resilience	
Buildings	Durable temporary homes for refugees
IT	Drones for efficient crop management
Cities	Fighting floods with mobile barriers
Creating Value from Local Resources	
Food	Vertical urban farming with closed-loop irrigation
Cities	District cooling system with seawater
Additional insights	
Access over Ownership	Peer-to-peer bicycle-sharing platform
	Leasing Organic kids' wear
Digital mapping	DIY monitoring for environmental accountability

6. Key trends 2016

According to Sustainia (2016) key trends included Cities as health promoters; such as traffic lights that prioritise cyclists and buses. Another key trend was making profit from unlikely materials; such as curing concrete with CO_2 rather than water; or 3-D printed shoes from abandoned fishing nets. Another key trend concerned disrupting the electrical grid such as deploying battery systems for solar power storage; and requiring new buildings to have green roofs or solar panels. Another key trend is People-Powered Data for better infrastructure; such as using mobile phone technology to improve bus and cycle networks. Table 4 lists example short-listed solutions by trend or sector.

Table 4: Sustainia solutions by key trend and sector 2016.

Key trend or sector	Example solutions
Smart buildings	Intelligent building management systems automatically optimises controls to save energy
	Prefabricated apartments and multi-storey blocks made with environmentally friendly materials
	Growing bricks with bacteria
	Using CO_2 to make concrete
	Cement-free mortar
Smart food	Affordable Solar-Powered cold storage
	Selling restaurant leftovers cheap
	From coffee waste to superfood
	Low cost smart greenhouses
	Beef-flavoured plant-based burgers
	Cooking food made from agricultural waste
Slow fashion	Sweatshirt guaranteed to last 30 years
	3D-printed shoe made from plastic waste
	Leather alternative made from pineapple leaves
	Smart platform for leasing clothes
	Turning worn-out cotton into quality fibres
Eco-transportation	Using mobile phones to map informal transit
	Bike-sharing for low income neighbourhoods

	Smart traffic signals to prioritise bikes and buses
	Creating an urban network for electric scooters
Smart IT	Intelligent indoor farming platform
	Heating homes with computing power
	Using street view cars to map air pollution
	Harnessing energy from radio waves
	App for remote eye care diagnosis
	Mobile kit to diagnose lung diseases
Education	Digital platform sparks supply chain learning
	Clean-tech micro businesses empower women
	Bringing digital learning into any classroom
	Smart home teaches sustainable living
	Empowering Youth through food education
	Zero-waste school cafeterias
	Practical training and mentors spark entrepreneurship
	Parental work-exchange funds schools
	Women's coding school bridges gender gap
Energy	Smart batteries reducing power consumption
	Pay-as-you-go solar energy to off-grid households
	Low-cost batteries from abundant resources
	Real-time electricity demand reduction
	Crowdfunded solar investments for the global south
	Pooling properties to finance energy upgrades
	Solar storage community platform
	Efficient, flexible, thin-film solar cells
	On-site system converts organic waste into biogas
	Biofuel made from waste CO_2 and sunlight
Health	Solar-powered toilet treats and recycles wastewater
	SMS-driven toolkit improves maternal and child health
	Toilet service offers sanitation and clean fuel
	SMS verification identifies counterfeit drugs
	Sharing Marketplace for healthcare organisations
	Clean water through solar-powered ATMs
	App provides urban air quality forecast
	Eco-friendly sanitary pads for African women.
	Affordable health insurance via SMS
	Smart cane detects raised objects
Cities	IT-enabled service delivery in informal settlements
	Legislation requires green roofs, solar panels
	Green belt limits sprawl and boosts food security
	Embracing water in a delta city
	Real-time monitoring for electric buses
	Using communities to bolster health
	Sharing resources to solve urban challenges
	Rescued healthy groceries feed the food insecure
	Formalising urban recyclers
	Personalised platform streamlines city services
Resources	Algae-based 3D-printing feedstock
	Solid waste management in refugee camps
	Vertical ocean farming creates healthy ecosystems

	Shower head optimises water usage
	Using larvae to convert food waste into animal feed
	Producing plastic foam from waste CO_2
	Water-saving pumps made from recycled materials
	Making carpet tile from old fishing nets
	Solar-powered water purification
	Circular model for office inventory

Significant to the reporting of the 2016 solutions was the mapping of the UN SDGs against the short-listed projects. It is too early to say what direct impact the introduction of the UN SDGs in 2016 has had on the overall number or quality of further innovative solutions submitted. Nevertheless, the fact that the UN SDGs are actively being used to map the Sustainia projects submitted in 2016 is a positive indication that they can be used to promote innovative solutions around the 17 goals; and serve as a further catalyst to inspire businesses, entrepreneurs and HEIs.

7. Circular economy solutions

Taking one example of the key trends identified by the Sustainia experts (2014), the circular economy trend demonstrates how concepts are borne out in practice. Clearly concepts related to the circular economy precede the UN SDGs. However, the UN SDGs provide a catalyst for renewed interest in applying the concepts in practice and across sectors and countries (e.g. the UN Higher Education Sustainability Initiative, HESI, 2016). Table 5 provides a description of the solutions.

Table 5: Circular economy solutions by sector

Sector	Circular economy solutions (examples)
Resources	Carbon-negative Plastic
	Biodegradable Plastic from Waste Materials
	Construction Products made from Recycled Waste
	Shower System Recycles and Cleans Water
	Paper Made from Banana Plants and Old Textbooks
	Water Treatment Plant Producing Renewable Energy
Fashion	Leasing jeans for a Circular Fashion Industry
	Global Take-Back System for Textiles
	Perpetual Recycling Makes Used Polyester New Again
	Turning Food Waste into Exotic Leather
	Used Clothing as a Currency for Development
	Recycled Plastic Bottles Reinvent Sustainable Fashion
IT	Automated e-Waste Recycling Kiosk
Health	Carpets that Clean the Air for Better Indoor Climates
Cities	City Drives Innovation for Liquefied Biogas
Education	Recycling Books for Literacy Worldwide
Buildings	Insulating Building Blocks from Recyclable Materials
Food	Reusing Food Waste as Energy and Fertiliser

The two sectors with the highest number of circular economy solutions identified by the Sustainia (2014) experts were the Resources sector with 7 solutions and the Fashion sector with 5 solutions. IT, Health and Cities had 3 solutions each; Education with 2 solutions; and Buildings and Food with 1 solution each. Examples from the Resources sector include: Biodegradable Plastic from Waste Materials. This solution creates plastic through bacterial fermentation of byproducts from sugar beet and cane production. The first product made from the new plastic is a lamp designed by Philippe Starck. See Image 1.

Image 1: Bio-plastic lamp

Examples from the Fashion sector include: Mud Jeans. Jeans are leased for a year then either kept, switched for a new pair, or sent back for re-use or recycling. The company creates clothing with far less water, and without harmful chemicals, and respecting workers well-being. See Image 2.

LEASE A JEANS FOR €7,50 A MONTH

Image 2: Mud jeans

The ultimate aim of such approaches is to demonstrate that even traditional industries can transform to a circular economy. (Sustainia, 2014). The trend has continued but with Sustainia (2015) the emphasis has also turned towards solutions that incentivise circularity. Thus 19 solutions were identified that exemplify how businesses and consumers are reacting to clear economic incentives to adopt more circular consumption patterns. For example, Vigga saves parents money by leasing out children's clothing before exchanging them for larger sizes as the child grows. Other solutions include: Circular Model for Air Filter Reuse; and Circular Workwear Production. According to Sustainia (2015) these solutions are incentivising circularity in 38 countries across six continents. With Sustainia (2016) the circular economy trend continued with the use of CO_2 as a feedstock for biofuel production; the production of 3D-printed shoes and floor tiles from abandoned fishing nets; flour created from discarded coffee cherry fruits; and concrete made from CO_2. See imagess 3 and 4.

Image 3: Concrete from CO_2

Image 4: D-printed shoes from recycled fishing nets

The challenge has been to tackle global problems; and such projects show how industry and organisations can work together to combat issues such as ocean plastic pollution; and, with the sequestering of $C0_2$ into bricks, reducing CO_2 emissions in concrete by up to 70% (Sustainia, 2016).

By mapping the solutions to the UN SDGs there is recognition of how multiple actors can work together to achieve targets that address global issues but also provide developing economies opportunities to develop new markets. As Lise Kingo (Sustainia, 2016:7) concludes:

> *There are already countless companies and organisations out there proving that through new mindsets and innovative thinking businesses can deliver on everything from good health and well-being and affordable and clean energy, to improved infrastructure and sustainable urban development, all while delivering on their bottom line.*

Thus businesses have the opportunity to remain viable and tackle social and environmental problems at the same time. The UN SDGs will not be reached overnight (see appendix 2 for progress on achieving the SDGs, ECOSOC, 2017) but the goals do provide a framework to recognise progress of businesses toward their achievement.

8. Discussion

According to Kingo (Executive Director UN Global Compact, Sustainia 2016) cities and governments around the world are embracing the new agenda of the UN SDGs and working to implement them as part of local and national policies. Further, Kingo argues that businesses are at the forefront of helping to shape the new technologies, solutions, and innovative business models needed to achieve the SDGs.

The above trends appear to have an undoubted impact on multiple sectors. And this is reflected in the growing interest in moving to more sustainable production and consumption patterns (as evidenced with this review of 100 global sustainability solutions). However, key questions are raised: to what extent are businesses geared up to these challenges? Have they the mindsets and skills needed to focus on the solutions required? Are HEIs developing such skills?

Moon (2013, 2014) identified the skills needed in the green economy and the eco entrepreneurial mindset required. Nevertheless, relatively few HEIs appear to be gearing themselves up for this challenge. Over 300 organisations have committed to the UN Higher Education Sustainability Initiative (HESI, 2016); and as these signatories are required to make SMART commitments towards achieving the UN SDGs then the UN SDGs can hardly be described as just a marketing tool. However, there appear to be few dedicated courses on eco-innovation or eco-entrepreneurship, green economy or sustainable business. And many HEIs operate with silos without the necessary cross disciplinary collaboration necessary to tackle complex societal and environmental problems.

There are exceptions. For example, in 2015 Hult International Business School and Ashridge Business School operationally merged to form one global business school; and more recently Ashridge/Hult took the strategic decision to also set goals based on the UN SDGs (see Ashridge, 2016). For example, GOAL #4: By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development. In fact, all research projects seeking funding through the Hult International Business School Research Fund are asked to articulate the contribution they make to one or more of the 17 Global Goals.

Other universities do provide programmes in Sustainability, Green Economy, etc. In the UK this includes HEIs at Bath, Bournemouth, Cambridge, Exeter, Imperial, Leeds, Nottingham, Southampton, Strathclyde. Significant to this paper is that most of these courses/programmes are collaborative across schools or disciplines. However, only Strathclyde appears to specialise in Environmental Entrepreneurship which they describe as the first course of its kind in Europe.

In a global study on Higher Education for Sustainable Development (Mader & Rammel, 2014), 425 higher education stakeholders from 101 countries responded and reported about their achievements and challenges. The study, carried out in collaboration with the International Association of Universities and financed by the Austrian Federal Ministry of Science Research and Economy, was presented in September 2014 at the international Conference on Higher Education for Sustainable Development in Nagoya, Japan. Globally 45% of respondents say that they are inspired by policies to integrate sustainability into their institution.

Thus, it appears that HEIs are willing to embrace the sustainability agenda in general but might lack the capacity to support the UN SDGs in their strategy and operations. The European Commission funded project "University Educators for Sustainable Development" (UE4SD) revealed that among 33 European countries there is a big lack of professional training programs in education for sustainable development. An investigation among 33 countries showed that even though 16 countries report about national strategies or action plans on sustainable development or ESD, only 9 strategies call for professional development and only seven countries report about national or regional initiatives for professional ESD training (UE4SD, 2014). Consequently there is a big gap between what is told in national or regional strategies and what is done to empower people to act accordingly.

The Mader and Rammel 2014 study for UNESCO Chair in Higher Education for Sustainable Development, International Association of Universities, Institute for the Advanced Studies of Sustainability (United Nations University) concluded that: to achieve related goals of drafted UN SDGs, HEIs, and higher education policy needs to take action to change not only single curricula, research programs or waste systems within institutions but enable a whole of institution and system-wide transformation in collaboration with practice. This transformation would be enhanced by the following actions:

- Establishing transdisciplinary settings for research and education
- Aiming at capacity building and training to enable individual and collective leadership for sustainability in higher education
- Initiating the assessment of global, regional and local challenges so to link global challenges to regional context
- Establishing sustainability as base line for higher education policies at national, regional and global level.
- Applying an whole institution approach that reflects people's needs and competences
- Inspiring transformations at the interface of education, research, policy and practice.
- Supporting a stronger focus on transformative education and new ways of teaching and learning.

Pictorially the above points are depicted by Mader & Rammel in figure 1.

Figure 1: System transformation for sustainable development at education, research, policy and practice interface

9. Conclusions

The above paper has reviewed a large sample of innovative solutions to global and local problems that go some way to tackling the issues identified in the UN SDGs. The review clearly shows that trends and solutions are transdisciplinary and impact across multiple sectors. HEIs need to fundamentally review their approach to Education & Research, Policy and Practice in this regard. This supports the call of Mader and Rammel (2014) as depicted in figure 1 for the transformation of Higher Education and Society through transdisciplinary approaches.

The author of this paper contends that the transformation of Higher Education described above requires no less than a reformation of Higher Education Institutions. HEIs that do not set goals based on the SDGs will not be able to transform the out-dated and institutionalised practices that have prevented them from fully preparing students to work in the green economy and sustainable development; and to produce the innovative solutions needed to tackle the goals the UN SDGs clearly identify.

Tackling pressing global problems of climate change requires creative thinking but also collaboration. The issues are simply too complex to leave to chance. As DNV GL (2016:6) conclude:

> "It is a mindset seeking to turn around our conception of good business towards a more holistic vision of profit and purpose. "

10. Notes

Sustainia is based in Copenhagen, Denmark, and is part of Monday Morning, Scandinavia's largest independent innovation house. Sustainia describes itself as a world leader in navigating the new market opportunities for the Sustainable Development Goals; and its mission is to innovate the business models of the future.

The Sustainia100 Advisory Board 2014 consisted of 21 experts from 11 international research organisations: Ellen MacArthur Foundation; EPEA Internationale; European Environment Agency; International Federation for

Housing and Planning; Natural Resources Defence Council; Nordic Fashion Council; Norwegian University of Life Sciences; United Nations World Food Programme; University of California, Berkeley; World Resources Institute; World Wildlife Foundation. The Advisory Board for 2015 also included: Acumen Fund; Blood Orange Consulting; Climate-KIK; Copenhagen Institute on Risk & Sustainability; Cornell University; Fashion Institute of Technology; Federal University of Parana; Yale University. The Advisory Board for 2016 also included: C40 Cities Climate Leadership Group; Indian Institute of Science; Kytabu.

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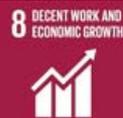
Appendix 1: Images of the reports used in the study

Appendix 2: Progress with achieving the UN SDGs

UN SDG image	UN SDG's	Progress towards the SDGs, (UN ECOSOC, 2016).
	Goal 1 - End poverty in all its forms everywhere	18,000 children still die each day from poverty-related causes.
	Goal 2 - End hunger, achieve food security and improved nutrition and promote sustainable agriculture	In 2014 159 million children had stunted growth.
	Goal 3 - Ensure healthy lives and promote well-being for all at all ages	In 2012 38m deaths per year from cardiovascular, respiratory disease, cancer, diabetes. In 2012 889K died from contaminated water and soil. Suicide is second leading cause of death for 15-29 year olds. In 2013 1.25m people died from road traffic accidents.
	Goal 4 - Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	In 2013 59m children were out of school. In 2014 40% of children in 9 African countries failed to achieve min proficiency in reading and maths.
	Goal 5 - Achieve gender equality and empower all women and girls	In 2015 44% of women in Southern Asia married before 18 years of age. In 2016 in 30 countries 1 in 3 girls subject to genital mutilation.
	Goal 6 - Ensure availability and sustainable management of water and sanitation for all	In 2015 946m without any sanitation. 663m drinking unimproved or surface water.

UN SDG image	UN SDG's	Progress towards the SDGs, (UN ECOSOC, 2016).
	Goal 7 - Ensure access to affordable, reliable, sustainable and modern energy for all	In 2014 three billion people rely on polluting fuels for cooking such as solid fuels and kerosene.
	Goal 8 - Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	In 2012 168m child labourers with 85m in hazardous work.
	Goal 9 - Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	In 2012 45-55% of SMEs in emerging economies were not served by financial services. In 2015 only 29% rural areas covered by mobile broadband.
	Goal 10 - Reduce inequality within and among countries.	2007-2012 nine countries had negative growth rates.
	Goal 11 - Make cities and human settlements inclusive, safe, resilient and sustainable	In 2014 30% of urban dwellers lived in slum-like conditions. In 2014 50% of the global urban populations suffered air pollution 2.5 x WHO limits.
	Goal 12 - Ensure sustainable consumption and production patterns	In 2010 material footprint in developed countries x 2 of developing countries.
	Goal 13 - Take urgent action to combat climate change and its impacts	Climate change remains biggest single threat to development.
	Goal 14 - Conserve and sustainably use the oceans, seas and marine resources for sustainable development	1974-2013 world marine fish stocks within sustainable limits reduced from 90% to 69%.
	Goal 15 - Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	1990-2015 world forest area declined from 31.7% to 30.7%.
	Goal 16 - Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	In 2014 victims of human trafficking included 18% girls and 7% boys.

UN SDG image	UN SDG's	Progress towards the SDGs, (UN ECOSOC, 2016).
17 PARTNERSHIPS FOR THE GOALS	Goal 17 - Strengthen the means of implementation and revitalize the global partnership for sustainable development	In 2015 fixed broadband in developing countries was only 7.1% and in least developed 0.5% .

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