Student Employability Skills: Perspectives of Faculty and Employers



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1. Introduction

Any student pursuing higher studies aspires to obtain an employment, which matches his/her qualification and abilities. While it is not very difficult to gain a certificate of qualification, it seems not so easy to acquire the required abilities, skills and competencies, especially in a labour market, where the demands for these are subject to rapid changes. These skills/attributes are collectively termed as employability skills and need modifications and sharpening as per the context and needs of the employment sector. The present paper forms part of an intensive on-going study by the authors to find out the key employability skills which employers are interested in, to understand the global scenario of employability skills and attributes and also to assess the skill/attributes possessed by engineering students.

A brief account of these skills is presented here, first by introducing employability skills frameworks formulated by a few developed and developing countries, and then by presenting a handful of relevant studies in this field. The employers and teachers being the major contributors in the realm of employability skills, an attempt is made to find out the perspectives of these two groups. Faculty members from six engineering colleges and prospective employers were contacted to elicit their perception regarding the importance of different employability skills/attributes in the selection process of final year engineering students. The major findings related to this aspect of the study, undertaken during July-October 2014, are given in a separate section.

Employability skills cover a wide gamut of skills, capabilities and personal qualities, as could be seen from the frameworks and policies of countries worldwide. The turn of the century has witnessed a remarkable emphasis in the development of employability skills in these countries' political agenda. They are geared for a turnaround and a total restructuring in the educational system from the kindergarten onwards. They plan these in close collaboration with parents, employers, faculty members, researchers and the civil society leaders. Those who hesitate and procrastinate to take the right decisions in this race for survival are brushed aside, making it extremely difficult for them to cope up with the front-runners.

As per the UK Commission for Employment and Skills report (UKCES Report, 2009), employability skills include, positive approach, self-management, thinking and solving problems, working together and communicating, understanding the business, and recognising the needs of customers and service users.

The Confederation of British Industries (CBI 2007) in their definition, has added, application of numeracy and application of information technology. They further state that employers value graduates who can demonstrate an entrepreneurial and innovative approach, and creative thinking.

The Department for Business, Innovation and Skills (BIS), U.K., report states that the employers look for 'hard skills' and 'soft skills'. (BIS 2011 p.62.) They differentiate these as:

Hard skills:- Job searching techniques, providing help with job search, CV writing, contacts with employers, help with finding and securing work placements/internships, career events and fairs, computer skills, research skills, time management, literacy, provision of temporary and vacation work.

Soft skills: - Career identification and planning, interview practice, understanding of career and how it works, communication skills, decision-making skills, presentation skills and team-working skills.

In this context it is imperative to have a close look at the 'employability skills perspectives' of a selected few of these countries. The countries include the United States, Canada, the United Kingdom, Australia, Singapore, Malaysia, China, and Japan.

The United States

The U.S. Department of Labor, Employment and Training Administration, gives the Work Place Know-how through 'The Secretary's Commission on Achieving Necessary Skills' (1993), popularly known as 'SCANS'. They constitute five competencies (Table 1.1a) and three-part foundation of skills and personal competencies (Table 1.1b).

The Common Core State Standards Initiative 2012, developed by the U.S., sets standard requirements for Mathematical Practices, English Language Arts (ELA), literacy in history/social studies, science and technical subjects from Kindergarten to High School. The Common Career Technical Core (CCTC) is intended to clearly indicate 'what students should know and be able to do after completing instruction in a program of study'. It includes an overarching set of Career Ready Practices with wide applications. It gives statements that clearly communicate the key 'knowledge, skills and disposition for career readiness' (www.core standards.org. www.careertech.org). The employability framework supports these initiatives of the government.

Table 1.1a The Five Competencies in SCANS

	Competencies						
1. Resources	2. Interpersonal Skills	3. Information	4. Systems	5. Technology			
Allocating time	Working on teams	Acquiring and evaluating data	Understanding social, organisational and technological systems	Selecting equipment and tools			
Allocating money	Teaching others	Organising and maintaining files	Monitoring and correcting performance	Applying technology to specific tasks			
Allocating Materials	Serving customers	Interpreting and communicating					
Allocating space	Leading		Designing or improving	Maintaining and			
Allocating staff	Negotiating	Using computers	systems	trouble-shooting			
	Working well with people from culturally different backgrounds	to process information	a, stella	technologies			

Table 1.1b The Foundation Skills Components in SCANS

Basic Skills	Thinking Skills	Personal Qualities	
Reading	Thinking creatively	Individual responsibility	
Writing	Making decisions	Self esteem	
Arithmetic and mathematics	Solving problems	Sociability	
	Seeing things in the mind's eye	Self- management	
Speaking and listening	Knowing how to learn	T	
	Reasoning	Integrity	

Source 1.1a and 1.1b wdr.doleta.gov/SCANS

The Key Areas of the Framework are:

1. Applied Knowledge 2. Effective Relations 3. Work Place Skills.

The Applied Knowledge area consists of Critical Thinking Skills and Applied Academic Skills.

The Effective Relations include Interpersonal Skills and Personal Qualities

The Work Place Skills are comprised of Technology Use, System Thinking, Communication, Information Use and Resource Management

Canada

Government of Canada (www.edsc.gc.ca), stipulating different levels of complexity defines the essential skills (2013) as:

- Reading
- Writing
- Document Use
- Numeracy
- Computer Use
- Thinking
- Oral Communication
- Working with others and
- Continuous Learning

The United Kingdom

Graduate skills and attributes valued by the UK employers as documented by a research team of the Glasgow University are presented in Box1.1.

Skills Valued by U.K.Employers (2011)

- Team Working
- Problem-solving
- Self-Management
- Knowledge of the Business
- Literacy and Numeracy relevant to the post
- ICT Knowledge
- Good Interpersonal and Communication Skills
- Ability to use own initiative but also to follow instruction
- Leadership Skills where necessary

Source www.edge.co.uk Edge/SCRE Centre Box.1.1 Skills valued by U.K.Employers (2011) The Confederation of British Industry (CBI) /Pearson Education and Skills Survey (2014), highlights in the CBI website, some interesting factors in recruiting school and college learners. These, in the order of importance are:

- Attitude towards work/character with 85% responses for 'very important'
- Aptitude for work -63%
- Basic Literacy and Numeracy- 44%
- Qualification Obtained 38%
- Academic Results -30%
- Relevant Work experience 24%
- Business Awareness -14%
- Other factors -2%

It further reports that more firms are demanding foreign language skills such as French, German, Spanish, Mandarin, Arabic, Polish, Russian, Cantonese, Japanese and Portuguese, to enter into new market opportunities.

Australia

Let us see the skills added from 2002 to 2013 by the Government of Australia, in its Employability Skills Framework. Table 1.2 presents them.

Table 1.2 Employability Skills Framework Australia

Skills in the Employability Framework -2002	Skills-Clusters in the Employability Framework -2013		
Communication	Cluster 1. Navigate at the world of work		
	a. Manage career and work life		
Teamwork	b. Work with roles, rights and protocols		
	Cluster 2. Interact with others		
Problem Solving	a. Communicate for work		
	b. Connect and work with others		
Initiative and Enterprise	c. Recognise and utilise diverse perspectives		
Planning and Organising	Cluster 3. Get the work done		
	a. Plan and organise		
Self-management	b. Make decisions		
	c. Identify and solve problems		
Learning	d. Create and innovate		
	e. Work in a digital world		
Technology			

Source www.innovation.gov.au.

Singapore

The Singapore Government through its Work Force Skills Qualification (WSQ) framework specifies its Foundation Skills or Employability Skills (ES WSQ), at varying levels- for managerial category, for operators and for supervisors. The employability skills at the managerial level (executive level) include Analytical, conceptual and evaluative skills, ICT Skills, Interpersonal Skills, Personal Management and Development Skills and Skills to manage Job Safety. For non- managerial roles, these are required at basic level for operators and at slightly higher level for supervisory roles. Work Place Literacy and Work Place Numeracy are also given under the Foundation Skills. Chinese Work Place Literacy is given as an additional Foundation Skill (www.wda.gov.sg).

Malaysia

Malaysia has undertaken a lot of employability related studies, especially in the engineering field. According to one such study by Rasul and Puvanasvaran (2012), 'thinking skill', 'interpersonal skill', and 'personal qualities' are considered very important by employers.

China

Zhang and Zou (2013), report Chinese Employer perspective, stating their preferred Skills and Personal characteristics. These are given in Table 1.3.

Table 1.3 Preferred Skills and Personal Characteristics- Chinese Employers

Basic Knowledge	Personal characteristics	Skills	
Political Knowledge	Honesty	Interpersonal Relationship	
	Independence	Teamwork	
Economic Knowledge	Self Esteem	Professional Morality	
	Ethical Behaviour	Strain Capacity	

Mathematics Knowledge- Application	Self -Confidence	Innovative Ability
	Enterprising Spirit	Problem Handling Capacity
Natural Science Knowledge	Endure Pressure	Leadership
	Adaptability	Information Technology
	Passion	Software Applications
	Enthusiasm	Presentation Skills
	Strong sense of responsibility	
	Trustworthiness	

Source Zhang and Zou (2013)

Japan

A recent study (Ito, H. 2014) with 530 Japanese companies, identified the skills and attributes sought by them. Apart from industry specific skills and expertise, they listed motivation, manner and attitudes, collaboration skills, and pro-activeness. Skills such as logical thinking, critical thinking, presentation skills, discussion skills and foreign language skills were considered less important by these employers.

India

Government of India, through its highly ambitious National Skill Development Initiative, has set a target of skilling 500 million people by 2022. Its document notes... "To stimulate and support reforms in skills development and to facilitate nationally standardised and acceptable, international comparability of qualifications, a "National Vocational Qualification Framework will be established" (National Policy on Skill Development, 2009, page 25. www.skilldevelopment.gov.in). through its various plans and programmes, it aims to impart quality skill training for self-employment as well as for potential job-seekers. Formulation of Labour Market Information System (LMIS), the National Skills Qualification framework (NSQF), Curriculum Development and Occupational Standards Development are among the key action points. In tune with the central government plan, different State governments have also set their programmes in motion. The present Government has formed a New Ministry, the Ministry of Skill Development and Entrepreneurship and is in the process of revising the policy with additional inputs.

The National Board of Accreditation (NBA), India, promotes internal quality standards for technical education in India. India is presently (2014) a signatory to the Washington Accord, the membership of which is an international recognition of the quality of undergraduate engineering education offered by the member country and is an avenue to bring it into the world-class category. This, in turn would facilitate the mobility of engineering graduates and professionals at international level (www.nbaind.org).

The NBA (2012) has set parameters for undergraduate engineering programmes, called 'Graduate Attributes for UG Engineering Programme'. The key areas of this include:

- Engineering knowledge
- Problem Analysis
- Conduct investigations of complex problems
- Modern Tool Usage
- The Engineer and Society
- Ethics
- Individual and Teamwork
- Communication
- Project Management and Finance and
- Life-long Learning

Blom and Saeki (2011) of the World Bank, as part of the Second Phase of Technical Education Quality Improvement Programme (TEQIP-II), and in close collaboration with the Ministry of Human Resource Development (MHRD), Government of India and the Federation of Indian Chamber of Commerce and Industry (FICCI), investigated the employability and skill set of newly graduated engineers in India. They had used the 'expected learning outcomes' by the National Board of Accreditation (NBA), as one of the main sources for developing their questionnaire. The data collected through survey with 157 employers, revealed that qualities such as integrity, reliability, teamwork, willingness to learn, entrepreneurship, self-discipline, self- motivation and communication skills, were 'very high' in the level of importance.

2. Global Employability Skills

The skills and attributes, laid stress upon by these countries, along with other literature on the topic, lead us to take cognizance of the prominence they attribute for personal qualities in the employability skill spectrum. Qualities such as honesty/ integrity, commitment, reliability, responsibility, willingness to learn, positive attitude, self-esteem, self-discipline and self- confidence, occupy the category of 'very important' employability skills/attributes. Equal importance seems to have been given for teamwork/interpersonal skills, which includes customer service skill, managing workforce diversity, emotional and social skills, conflict management and negotiating skills. The growing global demand for service sector jobs explains this need. Problem-solving skills, analytical skills, reasoning and critical thinking skills, once considered as the skill for the top

management, are now demanded at the entry level too, as planning and decision making roles are more and more decentralised. Communication skills and the use of information technology for effective communication, form another area demanded and valued for the present day functioning and for strategic plans and programmes of the days to come, in this knowledge-driven economic world.

Commercial/Business awareness, life-long learning, work safety, political, environmental, legal and social awareness, foreign language and work experience (during the course of studies) are other areas that gain focus.

Policy makers with vision and wisdom understand that these skills/attributes could not be pumped into the students during their final year at school/college, to make them job-ready. They set the foundation from primary education onwards, continuing over to secondary and tertiary education. They give thrust to learning by doing and experiential learning. They revise up-date and restructure the curriculum periodically. They motivate the children to be self-learners. The children thus grow to be self-motivated and self-confident to face the challenges in the employability field.

3. Perspectives of Faculty and Employers - Findings from the study by the authors

Taking note of the above global scenario on employability skills, replete with employer perspectives, it would be interesting to probe how the group that is responsible to instil these skills in their students, view them.

Relatively few studies that capture the perspectives of faculty in this sphere have been published. Among those published, many have restricted the use of those for their in-house purpose only. The authors have collected responses from 68 faculty members from six engineering colleges from the southern part of India, to find out the skills/attributes they considered 'very important', 'important', or 'less important' in the employability of their students. The responses were given scores as 'Very Important'-2 and 'Less Important'-1. Academic heads and teachers with more than five years teaching experience, and who volunteered to give their true and honest responses, were contacted to elicit their views. The skills- set developed by Blom and Saeki (2011), with slight modifications were used for the study. The faculty were also requested to write three key suggestions to improve the employability skills of their students.

The same set of skills were presented to 41 employers – 31 from within India and 10 from employers of Indian origin, employed in different countries abroad – including the U.S, Canada, Australia and Singapore. Employer, for the purpose of this study, is defined as a senior officer, involved in the selection and recruitment/training of newly recruited engineers or has managerial role that involves supervision/assessment of the newly recruited engineers. Snowball sampling was used for the selection of employers. The sectors in which these employers are engaged include manufacturing, telecom, Information Technology (IT), IT-enabled services, consulting firms and public sector service firms. Among other things, the employers were also requested to give three very important areas that need to be focused upon to improve the overall employability of engineering students.

Let us have a comparison of the importance of skills/attributes, expressed by these two groups. The mean scores of importance for different skills range from 2.7647 to 1.8382 for faculty group and from 2.878 to 1.8049 to employer group, indicating, all the skills fell well above half way between 'important 'and 'very important' category (and none of the skills were 'less important'). Table 3 .1 gives the skills that found place among the top ten positions, as per the total score received on importance.

Faculty Perspective N=68				Employer Perspective N=41		
Total Score	Mean Score	Skill/Attribute	Rank	Skill/Attribute	Mean Score	Total Score
188	2.7647	Problem Solving Skill	1	Honesty, Integrity and Dependableness	2.878	118
185	2.7206	1.Honesty, Integrity and Dependableness 2. Teamwork	2	Teamwork	2.8537	117
181	2.6618	Data analysis and Interpretation	3	Reliability Problem Solving Skill	2.7805	114
180	2.6471	Self-Discipline	4	Understands and takes direction for work assignments	2.7317	112
179	2.6323	Self-Motivation	5	Basic Computer	2.7073	111
178	2.6176	Willingness to Learn	6	Self-Discipline	2.6829	110
177	2.6029	Verbal Communication in English	7	Willingness to Learn	2.6341	108
173	2.5441	Apply Knowledge of Mathematics, Science and Engineering	8	Data Analysis and Interpretation	2.6097	107
170	2.5	Basic Computer	9	Self-Motivation	2.5854	106
169	2.4853	Self-Awareness	10	Flexibility and Adaptability	2.5610	105

Table 3.1 Skills/Attributes under the 'Top Ten' Category, in the Order of Importance

Source Authors' Primary Data

While the perspectives of faculty and employers, to a great extent synchronise with each other, a close look at the figures would reveal that the attributes such as 'reliability', 'flexibility and adaptability', and 'understands and takes direction for work assignments', did not find a place in the faculty priority list. Instead, skills such as, 'Verbal Communication in English,' Apply Knowledge of Mathematics, Science and Engineering' and the attribute of 'Self Awareness', are the ones chosen by them. Attributes of reliability, flexibility and adaptability are personal qualities, which need to be developed from childhood onwards. Employers find it difficult to develop these, even with the best of training at the workplace.

Faculty Responses			Employer Responses			
Total Score	Mean Score	Skill/Attribute	Rank	Skill/Attribute	Mean Score	Total Score
168	2.4706	Use Appropriate Modern Tools, Equipment, Technologies	11	Written Communication in English	2.4878	102
166	2.4412	Life-long Learning	12	Verbal Communication in English	2.4146	99
165	2.4265	Written Communication in English Reading Creativity Understand and takes directions for work assignments	13	Customer Service Skill Apply Knowledge of Mathematics, Science and Engineering	2.3658	97
164	2.4118	Flexibility and Adaptability	14	Self-Awareness	2.3415	96
163	2.3971	Design a system, component or process to meet desired end	15	Creativity	2.3171	95
162	2.3823	Reliability	16	Empathy	2.2927	94
161	2.3676	Entrepreneurship Skills	17	Use Appropriate Modern Tools, Equipment, Technologies	2.2683	93
154	2.2647	Academic Excellence	18	Advanced Computer	2.2439	92
147	2.1618	Empathy	19	Life-long Learning	2.195	90
144	2.1176	Advanced Computer	20	Reading	2.0732	85
136	2.0	Customer Service Skill	21	Design a system, component or process to meet desired end	2.0488	84
125	1.8382	Business Awareness/ Knowledge of Contemporary Issues	22	Business Awareness/ Knowledge of Contemporary Issues	1.9268	79
			23	1.Entrepreneurship Skills 2. Academic Excellence	1.8049	74

Table 3.2 Other Skills/Attributes in Order of Importance

Source Authors' Primary Data

Table 3.2 displays the rest of the skills with their scores. As has been observed in the top category, here also we can notice very close agreement on the choices of the two groups, for majority of skills/attributes. 'Customer Service Skill' is one area where the rating has been at a lower level by faculty compared to the employer group. The emerging importance for service sector jobs and the need for social accountability, necessitate more customer orientation, not only by private employers, but by public sector employers as well. Employers rated technical skills such as 'use of modern tools' and 'design a system' at a lower level, the faculty considered them at a higher level. Employers, as per many reports, feel that the technical skills could be developed through training, and therefore, they are not much concerned about them.

A quick comparison of these findings with that of the World Bank study by Blom and Saeki (2011) would be worth at this juncture. These are presented in Table 3.3.

Table 3.3 Level of Importance of Skills/Attributes: Comparison of World Bank Study (2011) Findings with Student Employability Skills Study, 2014

	Level of Importance		
Skill/Attribute*	World Bank Study,	Student Employability study, 2014 authors (study II)	
	2011(study I)	Employer responses	Faculty responses
Honesty, Integrity and Dependableness	1	1	2
Reliability	2	3	16
Teamwork	3	2	2

Willingness to Learn	4	7	6
Entrepreneurship	5	23	17
Self-Discipline	6	6	4
Self-Motivation	7	9	5
Flexibility and adaptability	8	10	14
Understands and takes direction for work assignments	9	4	13
Use Appropriate Modern Tools, Equipment, Technologies	10	17	11
Written Communication (in English)	11	11	13
Apply Knowledge of Mathematics, Science and Engineering	11	13	8
Creativity	11	15	13
Reading	12	20	13
Data analysis and Interpretation	13	8	3
Verbal Communication (in English)	14	12	7
Basic Computer	15	5	9
Problem Solving	16	3	1
Empathy	17	16	19
Design a system, component or process to meet desired end	18	21	15
Business Awareness/ Knowledge of Contemporary Issues	19	22	22
Advanced Computer	20	18	20
Customer Service Skill	21	13	21

(* The ratings of study I, calculated by the authors based on the mean scores given in the Blom and Saeki, 2011 report. Only those skills/attributes, which are common to both studies, have been considered for comparison purpose.)

As far as the employer responses are concerned, Entrepreneurship skills, Use of modern tools, Reading, Basic computer, Problem solving, Customer service skills - these are the major ones which have wide differences between the findings of the World Bank Study and the present study. Barring these, the ratings received for the skills bring to light only small differences. Honesty, integrity and dependableness, collectively, is one attribute scoring the same topmost rank in both studies. Ranks for 'Self Discipline' and 'Written Communication in English', also are the same. Personal Qualities such as 'Reliability, 'Teamwork' and 'Empathy', show a difference of one place in their level of importance between these two studies.

Comparing the faculty responses with the World Bank study, the major differences observed are for the following skills.

- Problem solving
- Reliability
- Entrepreneurship
- Data Analysis and Interpretation
- Verbal Communication in English
- Flexibility and adaptability and
- Basic Computer

On the whole, we can notice an accent on the thrust given by employers for personal qualities, compared to that of the faculty.

Business awareness/ knowledge of contemporary Issues, is one that is being emphatically recognised as an important skill, though not, 'very important', at the entry level positions. So is the case with Entrepreneurship skills.

Going through these different skills, what one has to remember is that it is the collective and the synergetic effect of these skills that makes the difference, rather than a single skill or attribute, in isolation. Excellence in one or two skills will not lead to employability. One should have the capacity to acquire, develop and market these skills, as per the contextual requirements, to succeed in the employability corridors.

Suggestions from Faculty and Employers to Improve the Overall Employability of Engineering Students

Through an open-ended question, the two groups were requested to offer their suggestions for the overall enhancement of the employability skills of the engineering students. Most of the respondents were generous in recording their suggestions in the questionnaire. Selected few are given in Box 3.1.

Besides these, enthusiasm, self-confidence, self-motivation, the need to receive training from home to acquire the quality of responsibility, willingness to learn, attitude to learn, other interpersonal and problem-solving skills were listed by the faculty. The employers stressed the need for - in-depth subject knowledge and practical application of this knowledge, the right skill and aptitude for work, learning with minimal guidance, understanding the tasks to do, not to wait for step-by step direction, social commitment and dedication.

Suggestions from Faculty

- Additional courses for skill development-soft skill training, communication skills, spoken and written English, presentation skills, personality development, leadership skills – allocate sufficient time to learn these skills
- Develop socially acceptable personal qualities
- Students should present themselves in smart ways
- Team-based activities to improve interpersonal skills
- Organise seminars, talks and technical workshops
- Try to acquire knowledge by themselves, awareness of new technologies, read to know about new technologies, update latest technologies, extensive use of web resources for knowledge acquisition
- Revamp and restructure pre-primary, primary, middle school and high school education, de-link higher secondary two year course from schools and establish Junior Colleges, have job-oriented syllabus, revise curriculum as per industry requirements
- Emphasis on project work
- Spoon feeding system of education must be changed
- University should improve the quality of the assessment system
- Curriculum, examination, evaluation techniques- all to be oriented to encourage creative and original thinking
- Discussions with young entrepreneurs, visiting start-up villages

Suggestions from Employers

- Skill development- verbal and written communication in an international environment, appropriate to the level of the audience, language skills, presentation skill, customer facing /service skill, opportunities to improve interpersonal skills
- Learn basic etiquette
- Focus to develop integrity and honesty
- Understanding the business, how a fresh engineer can contribute and build a career
- Exposure, while in college, to current market and industry trends in technology and business
- Academic training to mould students to enable them for transforming knowledge to practical scenario
- Practical opportunities to conceive and implement projects with a suitable mentor/guide
- Industry-oriented curriculum (less cramming)
- Technical up-gradation, technical know-how, professional knowledge, hands-on experience
- Long-term career vision focusing on talent and job satisfaction rather than on remuneration
- Self-accountability and self-motivation
- Taking ownership for the job one takes up to do
- Impression management
- Commercial Thinking
- Self-employment skills

Box 3.1 Suggestions from Faculty and Employers to Improve the Overall Employability of Students

These qualitative inputs contributed to this study by the faculty and employers give much food for thought. Industry-oriented curriculum, application focused teaching methodology, project orientation with qualitative and innovative approach, setting rigorous and on-going assessment and evaluation system, internship during the academic course itself, provision of adequate facilities- infrastructure as well as learning environment, team based co-curricular and extra-curricular activities, exposure to modern technology, research and industries, developing entrepreneurial mind, and above all, developing an enabling environment for self-development-these are but a handful of base level solutions only. The road to international standards, is too far, but reachable, too.

4. Conclusion

Student Employability Skill development, as we have seen from these various sources and evidences, is a process, requiring utmost diligence and vision. Raising the standard of these skills in a qualitative manner, to reach global levels, and to sustain and refine those calls for strategic intervention, efforts and collaboration with various partners at various levels. With a strong political and social will to achieve, the impossible becomes possible.

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