CAN 'SPACE-BASED TECHNOLOGIES' BE A SOLUTION TO OVERCOME THE BOTTLENECKS OF SUSTAINABLE DEVELOPMENT GOAL #4 ?

Kavya Kamepalli, IIAEM, Jain University (kavyakamepalli@gmail.com)

SDG #4 - To ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

SEVEN OUTCOME TARGETS:

4.1 Universal primary and secondary education
4.1.1: Proportion of children and young people (a) in Grade 2 or 3; (b) at the end of primary education; and
(c) at the end of lower secondary education achieving at least a minimum proficiency level in (i) reading and (ii) mathematics

4.2 Early childhood development and universal pre-primary education
4.2.2: Participation rate in organized learning, by gender

4.3 Equal access to technical/vocational and higher education
4.3.1: Participation rate of youth and adults in formal and non-formal education and training in the previous 12 months

4.4 Relevant skills for decent work
4.4.1: Proportion of youth/adults with information and communications technology (ICT) skills, by type of skill

4.5 Gender equality and inclusion
4.5.1: Parity indices (female/male, rural/urban, bottom/top) wealth quintiles and others, such as disability status, indigenous peoples and conflict-affected

4.6 Universal youth literacy
4.6.1: Proportion of a population in a given age group achieving at least a fixed level of proficiency in functional (a) literacy and (b) numeracy skills

4.7 Education for sustainable development and global citizenship
4.a Effective learning environments
4.a.1: Proportion of schools with access to: (a) electricity; (b) the Internet for pedagogical purposes; (c) computers for pedagogical purposes; (d) adapted infrastructure and materials for students with disabilities; (e) basic drinking water; (f) single-sex basic sanitation facilities; and (g) basic handwashing facilities

4.b Scholarships
4.b.1: Volume of official development assistance flows for scholarships by sector and type of study

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

INDICATOR	SIGNIFICANCE IN THE WEST ASIAN CONTEXT	BOTTLENECKS
4.1.1	Would increase higher enrolment rates and interest in education among children	Lack of awareness, resources, infrastructure etc.
4.2.2	Promotes quality in education	Lack of systemization
4.3.1	Formation of a well informed society	Gender disparities, social unrest, lack of affordability
4.4.1	Employability, transition to higher economic condition	Lack of required resources, gender disparities
4.5.1	Education is widespread and thus reduces inequality	Gender disparities, spur in conflict situations
4.6.1	Development of nation, economic stability, motivation to other citizens	Lack of enabling environment, shortage of skilled teachers

SDG #4 Global Indicators in West Asia - 2018
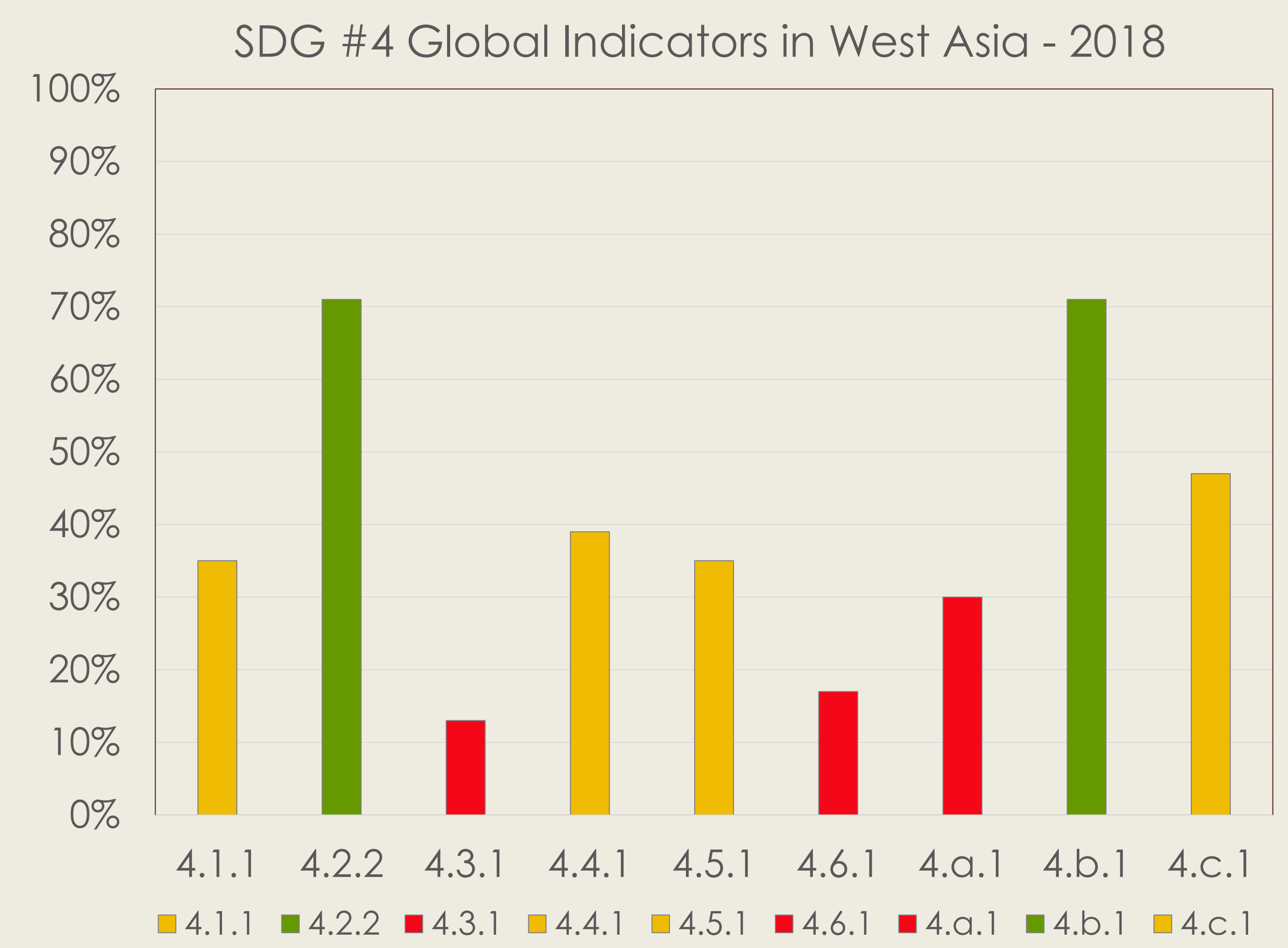
* SDG 4 Data Book: GLOBAL EDUCATION INDICATORS 2018- UNESCO

The rate at which SDG 4 is progressing, West Asia may not be able to realise SDGs by the year 2030.

CAN SPACE-BASED TECHNOLOGY OFFER ADDITIONAL MOMENTUM?

AVAILABILITY of suitable Space Technology: Using satellite mode of communication, linkages can very easily be established between two distant institutions, representing two extremes in terms of infrastructure and resources, provided the required infrastructure is in place.

PROPOSED MODEL:
The satellite could have multiple regional beams covering different parts of the country. The end users being- educational institutions, are required to have a receiving ground station. Teachers from mentor institution, through uplink facility can interact with students in subject related matters as the case with 'Virtual Class Room' (VCR). By having such a setup, satellite system can facilitate the dissemination of knowledge all over the country and specially to the rural and remote areas.

ADAPTABILITY of the model: Once the link has been authenticated, interactive satellite based distance education system can be devised for the country through audio-visual medium to schools, colleges and homes (employing Direct To Home (DTH) quality broadcast), adopting the 'Non-traditional' mode of teaching cum learning. Well trained resource persons could be engaged for respective subjects, in such a way, students don't have to travel far, thus enabling them to overcome certain barriers (geographical/social/ gender). Live sessions with skilled persons/ industry personnel can also be coordinated. Student community could take an active role and assimilate knowledge as it would help them to secure gainful employment.

ECONOMIC VIABILITY of the model: The cost of the model can be significantly reduced by using Software Defined Radio(SDR) as a substitute to ground station receiver, eliminating analog hardware and its cost, resulting in simplification of radio architectures, improved performance and would provide an opportunity to recognize and avoid interference with other communication channels as well.

SUCCESS STORIES

MISSION	COUNTRY	OBJECTIVE-ACHIEVEMENT
SATELLITE INSTRUCTIONAL TELEVISION EXPERIMENT(SITE)	INDIA/USA	To educate the poor people of India on various issues via satellite broadcasting- Covered more than 2400 villages in 20 districts of six Indian states and territories
EDUSAT(GSAT 3)	INDIA	To connect urban and rural educational institutions throughout India- Growth potential of Tele-Education systems for country wide high quality mass education programmes
NENESA TV	SRI LANKA	Television channel developed to bridge the education gap between urban and rural Sri Lanka- Connecting 1000 more schools

WAY FORWARD

West Asian countries should consider this model and try to integrate satellite based education to the aspirations of the growing student population at all levels through the concept of tele-education. UNOOSA may consider this model for wider adaption across the globe.