Impact of Space on Society

There is no denying the fact that space activities have a positive and beneficial impact on everyday life and society and thus help people to understand that, despite the high costs of space activities, there is a tremendous return to the community in terms of scientific knowledge and technological knowhow, jobs and space spin-offs. Space activities, implemented through visionaries and pioneers, have helped create the concept of one World also termed as global village.

The one World perception

With the development of new sensors in the 21st century, the impact of space activities on the welfare of humanity will only increase. One of the most significant events of the 20th century was the landing of human on the surface of the Moon. It is expected that the expansion and insight of human into the cosmos will produce some of the more significant events in the 21st century. The period between 1957 and 1991 saw the dawn of the space age with flights to the planets, footprints on the Moon, the tele-communications revolution, satellite weather forecasting, mapping, mineral exploration, water resource management, disaster mitigation, national security or hundreds of the applications. In addition, the enormous knowledge already delivered through space exploration and the benefits and spin-offs of space technologies have been integrated so deeply in our modern society that life without these would now be quite difficult. Weather, Telecommunications, Environmental analyses and National Security are only the most obvious space technologies that humanity relies on, though spinoffs and transfers from space to non-space sectors provide many additional indirect benefits.

The last few decades, however, have brought about a new era of space exploration and international cooperation by developing sophisticated space technologies by nations. Some of the glaring examples are the images of distant stars and galaxies using Hubble telescope; research laboratory such as International Space Station to conduct experiments in biology, human biology, physics, Astronomy and meteorology under microgravity environment and testing of the spacecraft systems that will be required for missions to the Moon and Mars; High-resolution Satellites for continuous observations of our own planet earth. In a couple of decades, we would be able to have unlimited and clean solar energy from space for our industries as well as heating and lighting our homes. In the near future, it would be possible to disposed-off our nuclear waste safely and inexpensively and released towards the Sun using a Space Elevator. We may become a tourist in Earth orbit or on the Moon. We may carry out extra-terrestrial mining and even introduce the development of a multi-planet economy.

Education is also an integral part of space activities. Education or dissemination of knowledge from one generation to the next has been the driving force behind the progress of humankind. The duty of any generation is to educate the following one. Space is not only a fantastic tool for inspiring and educating youth, but also because of many disciplines involved and the expertise that space developments require. Furthermore, the introduction of 'space incubators' will afford young entrepreneurs the opportunities to take space technologies and create new products and services for the non-space sector – thus adding even more value to the investments in space.

Space activities stimulate the development of new technologies – as an innovation factor, as a competitiveness factor, and as a key to the consolidation of industrial

capabilities, without which there are no space activities. As a result of such activities, both governments and the general public are today increasingly realizing the enormous potential of space technologies and just how it is being integrated into everyday life.

Although space programmes are expensive and the public might query that what space has contributed significantly to humankind against huge investments on space activities, because its impact upon society has largely been measured in numerical terms. For example, how many spacecraft have been launched by a given country? How many phone calls are made over a satellite? How many lives could be saved by search and rescue satellites? How much money was spent on space activities by a nation? Since space endeavors are, for the most part, funded through taxes from the general public, it becomes inevitable that the value and benefits of such space activities must be justified.

The response is very positive, because space has contributed significantly to humankind that have helped and improved society by providing communication and education services in remote areas, bringing information and entertainment to the masses, creating new materials for stronger and more durable structures, providing meteorological data so ships can be safer at sea, monitoring the threat of pollution, enhancing medical instruments for better health-care, enabling hikers and skiers to be located when lost, and many more. As no negative impact on space activities has been registered so far by the society, the investments made by the nations on space activities are justified and not the waste of money.

Space activities impact society in diverse ways. The path to gaining knowledge through scientific as well as technical discoveries which in their turn benefit society in many ways such as; the camera in space developed to take pictures of far-distant galaxies now used as a medical instrument to detect lymph-node cancer; the instruments on an orbiting spacecraft designed to discover more about the structure of planets can be packaged into a portable device for identifying the minerals in rocks on Earth; the Sun's rays can be harnessed to provide cheap and abundant solar energy to warm and light our houses. These spin-offs technologies would not have been possible without development of space technology. The search for life also drives space exploration. Are we alone in the Universe? Are we unique? We will never rest until we know. For the purposes of such exploration, we then have a need for new or improved technologies. Given that we have this built-in desire to explore, we will eventually develop the technologies to do this when the real need is there and when other enabling technologies and materials become cheap enough or feasible enough to do so. This may take years or centuries to achieve, but as is evidenced by human perceptions and thoughts such space activities will always have an impact on society and humanity.

Shafatullah Khan
SUPARCO