system-on-chip (SoC) communication, at least at the nanometre scale.

Thirdly, satellite-based experiments for holding continuous-variable teleportation using polarized qubits and optical fibre may be extensively performed, as satellites may act as the backbone of the system.

Lastly, the most important factor, i.e., funding will be much needed to pursue cutting-edge research in this domain. Private corporations can help in this regard by releasing large amounts of money. Government agencies should also universities and research organizations while drafting new policies and regulations to ignite smart minds to commercialize the related futuristic developments as soon as possible[2,3].

1. Pirandola, S. and Braunstein, S. L., *Nature*, 2016, **532**, 169–171; doi:10.1038/532169a
2. Ray, P. P., *J. Comput. Networks Commun.*, 2016, **2016**; doi:10.1155/2016/1579460.
3. Ray, P. P., *Curr. Sci.*, 2016, **111**(12), 1903–1905.

PARTHA PRATIM RAY

Department of Computer Applications, Sikkim University, 6th Mile, PO Tadong, Gangtok 737 102, India
e-mail: ppray@cus.ac.in

Captive wind power for transfer of water across the Western Ghats, India

Conversion of the kinetic energy of blowing wind into electric energy, employing wind turbines of modern design that use electronic controls for the production of steady AC power, is now well-established for utilizing a free, eco-friendly resource. Much information regarding the methods is available on the Internet[1]. The possibility of employing captive wind power-generating systems for pumping freshwater from the western side of the Western Ghats, India, currently largely wasted into the Arabian Sea, in order to increase the water availability on the eastern side, needs to be seriously considered. The proposal, primarily based on the assumption that significant quantities of water available during the monsoon months can be pumped across by wind-power, assisted by power supply grid if needed, offers many advantages over many recently considered ones. The latter involve building multiple dams for river diversion, high-energy consuming multistage pumping of water to the required elevation, presumably using power generated by using fossil fuels, tunnelling for transfer of water, etc. (Look up 'Yettinahole Project Report' on the Internet using any search engine.)

The points enumerated below need to be taken collectively:

(1) Variations in the amount of power generated caused by changes in wind velocity can be smoothed out by an interconnected grid.

(2) The proposal is inherently modular. If an initially executed pilot project is found successful, its elements can be copied for extension or execution elsewhere. Here 'elements', includes units like wind-power generators and associated installation, electrical transmission equipment, pumping units, piping, etc. which can be added to or removed independently, as required.

(3) The wind farms must be located out in the sea on anchored down-floating platforms, or on platforms mounted on pillars modelled like offshore rigs that pump oil.

(4) Large-capacity pumps can be located in estuaries of rivers just before the water turns briny. High-horsepower motors can pump water to high elevations and, if necessary, booster pumping stations can be located at the heads of seaward-opening valleys. (Google Maps would be of assistance in the initial consideration of locations.)

(5) Low-elevation saddle points on mountainous regions must be identified for installing piping for conveying water in order to not only cause least damage to the delicate ecosystems, but also avoid tunnelling as far as possible. (Google Maps would be of assistance in the initial consideration of locations.) There is the precedence of piping gas to the eastern interiors from terminals in the receiving harbours on the western coast.

(6) There are many places world over that use salt water and biological barriers for diverse purposes. The methods developed for erecting these barriers can be adopted to protect the take-up inlets. (Google Maps would be of assistance in the initial consideration of locations.)

(7) The local population can have no grounds to object to freshwater being pumped away just before it enters the sea.

(8) Best practice could be to lay large diameter water piping, electrical transmission lines, etc. underground so that the aesthetics of the seashore is not allowed to get deteriorate beyond a point.

(9) There is much potential for training and employing maintenance personnel.

(10) A study on the feasibility of making freshwater available in the scarce regions should be the paramount consideration. Hydraulic, electrical and civil engineers, environmentalists, cost-accountants, etc. need to work together for arriving at all the details of the projects.

(11) The proposals would be practical and financially feasible, if funded and operated perhaps by public–private partnership. An example is the Konkan Railway. Assistance from international financial institutions can also be sought.

(12) Creating additional capacity on the eastern side may become necessary for storing when availability of fresh water increases.

The present proposal is intended to create interest in using captive wind power for transferring freshwater where it is much needed for serving a public purpose, meeting a dire need. Detailed project studies can be undertaken once such interest is created.

1. http://www.mpoweruk.com/wind_power.htm (last viewed on 9 January 2017).

S. N. BALASUBRAHMANYAM

'Saras Kshetra',
Machohalli P.O.,
Bengaluru 560 091, India
e-mail: snobchem@hotmail.com