Brief for GSDR 2015

Science Diplomacy to support global implementation of the Sustainable Development Goals (SDGs)

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Implementing the SDGs at global level requires ingenuity and willingness to cooperate on all sides of the multiple global divides: be that-rich/poor, developed/developing, northern/southern hemisphere, state-led/market-led economies, democracies/non-democracies, and high science-technology/low technology/science countries.

Countries are embarking on a laudable and difficult journey. Sustainability – consisting of social, economic and environmental sustainable development- is expected to be implemented as a policy package. Successful implementation inevitably means aiming for maximum efficiency and effectiveness of current social and physical infrastructure conditions as well as searching for new technologies to make these ambitious but absolutely needed goals a reality for the benefit of global survival and constructive future global development.

Poor and under-developed countries will need transfer of technology from highly developed industrialised developed countries and all countries will be in need of new technologies to make the SDGs become a sustained reality on a global level. Sharing technology for the benefit of humanity can be achieved through science diplomacy.

From a global perspective, we should take note that the number of Least Developed Countries (LDCs) has risen from 24 in 1971 to 48 today. A short comparison serves as an eye opener. Based on World Bank 2013 statistics, the LDC group consisting of 918.9 Million people had a GNI per capita of USD 868.00, life expectancy of 61 years and CO2 emissions of 0.3 (metric tons per capita).[1]

By contrast, the USA consisting of 319 million people had a GNI per capita of 53'740.00 USD, a life expectancy of 79 years and CO2 emissions of 17.6 metric tons per capita.

This contrast is extraordinary and the main message also holds if this comparison were to include comparisons between the EU, Japan, Singapore and other highly developed countries with the LDCs and the even larger group of low-income developing countries. This contrast highlights the difference between deep poverty and high wealth. There are of course also the super-rich in the poor countries and very poor people in the richest countries of the world. The point here is not about inequalities- that would be an obvious and easy point to make. The main point instead is to state that the current global imbalances are not sustainable. Continued large scale imbalances of wealth and standard of living could result in increased migration, armed conflicts, crime and violence and extremism of all sorts. Should the industrialised and emerging countries remain incapable and unwilling to stop climate change, further environmental destruction appears inevitable and with that will come increasing vulnerability of large populations. This in turn will most certainly lead to more instability and more conflicts, not less and hence sustainable development would remain an illusionary goal if not helped through deliberate sharing of wealth, particularly of the wealth of sciences and technological know-how.

Science Diplomacy should be considered as a means to reduce the many imbalances and as a vehicle to lift humanity up towards sustainable growth and development. What follows is a short presentation of Sciences Diplomacy followed with examples how sciences diplomacy could provide

[1] http://data.worldbank.org/region/LDC

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the needed support for the global achievement of sustainable development.

Science diplomacy is the use of scientific collaborations among nations to address common problems and to build constructive international partnerships. Many experts and groups use a variety of definitions for science diplomacy. However, science diplomacy has become an umbrella term to describe a number of formal or informal technical, research-based, academic or engineering exchanges[2]

In January 2010, the Royal Society noted that "science diplomacy" refers to three main types of activities:[3]

- informing foreign policy objectives with scientific advice (science in diplomacy)
- facilitating international science cooperation (diplomacy for science);
- using science cooperation to improve international relations between countries (science for diplomacy)

As an example of the second type of science diplomacy, the Swiss federal government has created eighteen science counsellors and six swissnex (a public-private partnership to promote cooperation in science, technology, and innovation) and thus created an extensive Swiss science diplomacy network consisting of representation offices in Boston, San Francisco, Singapore, Shanghai, Bangalore and Rio de Janeiro.[4]

The efforts undertaken by Switzerland shows in regard to the current scientific achievements and the internationalisation of education and scientific research. Switzerland, together with Finland, produces the highest number of scientific papers per one thousand inhabitants (3.2); its citation index ranks second just behind the United States (116), and 70 percent of Swiss institutions and researchers participate in international networks. At Swiss universities, about 45 percent of professors and 30 percent of students as well as more than 50 percent of PhD students come from abroad.[5]

While Switzerland's achievements in regard to science are impressive, they are limited to a one-country effort. As laudable as these achievements are, we need to add to this national focus a global perspective. All countries, highly developed AND very much underdeveloped, need to benefit from science and technology. The interdependencies described above in regard to the plight of Least Developed Countries have to be included in the global community's agreements on how to achieve the SDGs.

As was observed in 2010 by the then UK Foreign Secretary David Miliband:[6]

> "The scientific world is becoming inter-disciplinary. But the biggest inter-disciplinary leap we need is across the boundaries of politics and science. On resource conflicts, global inequality, nuclear security and counter terrorism, science is our ally.
>
> Followed by
>
> "The development of commercially viable Carbon Capture and Storage mechanisms, or advances in the technology for low-carbon vehicles can have a major impact on our ability to forge the green revolution we need to avoid climate change. Genetic improvement of crop plants could rescue many millions from the endless cycle of poverty, hunger and violence that infects so much of our world. And in areas such as

[2] http://en.wikipedia.org/wiki/Science_diplomacy
[3] https://royalsociety.org/~/media/Royal_Society_Content/policy/publications/2010/4294969468.pdf
[4] file:///R:/users/saner/My%20Documents/14/Diplomacy/Sciences%20&%20Technology%20Diplomacy/Swiss%20Science%20Diplomacy%20%20%20Science%20&%20Diplomacy.html
[5] Bibliometrische Untersuchung zur Forschung in der Schweiz 1981-2009 (Bern: Swiss State Secretariat for Education, Research and Innovation, 2011), http://www.sbfi.admin.ch/dokumentation/00335/01740
[6] https://royalsociety.org/news/2010/science-diplomacy/

> cyber-security, bio-defence or early warning systems for natural disasters, it is science that holds the key to our future security.

High technology has a dual use- it could be used to serve military and intelligence objectives (

In contrast to the military use, science and high technology could be put to constructive use for the benefit of peace and social and economic development of the world community. The same holds for the social sciences which could also be used to achieve destructive or constructive objectives.

Alternative policies exist for all three SDGs. Economic sustainability could benefit from complementing standard macro- and micro-economic policies with policies such as social economy, solidarity economy and cooperatives.[7] Alternatives to sustainable social development are for instance being explored by the UNESCO based Transformation to Sustainability Program which brings together social science researcher from developed and developing countries who search for methods and solutions to facilitate sustainable social transformations [8]

Alternatives also exist in regard to reductions of CO2 emissions which are largely believed to cause climate warming. Instead of wasting time expecting that the USA, China and India would join the Kyoto Protocol and make firm commitments in regard to quantified reductions of national CO2 emissions, a carbon tax could be added to prices of goods and services to integrate externalities into the market price of traded goods and services. [9]

For all three SDGs- social, economic and environmental sustainability, Science Diplomacy could greatly support countries' efforts in achieving the SDGs as long as science and high technology is made available for the common good of humanity. The interdependence of countries at global level and the need for cross-border cooperation and partnership in science and technology as for instance exemplified recently with the outbreak of the Ebola pandemic is described by Alan Lasher as follows[10]:

> During discussions with senior political leaders from the region (East African Community), it became abundantly clear that to be effective, regional science needed to be imbedded into regional diplomacy. We also recognized that the long term success of any regional integration would require the free movement and cross-national training of people within the region and the sharing of research and data over the long term.

And to bring the focus of this short policy paper to the concrete challenges of one important function of SDG implementation namely the designing of a SDG monitoring system that is meaningful, effective, efficient, transparent, and inclusive and participation based would require social science and IT solutions to fulfil the following requirements:

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[7] Utting, P; van Dijk, Nadine; Mathei, M.A."Social and Solidarity Economy: Is There a New Economy in the Making?" http://www.unrisd.org/unrisd/website/document.nsf/%28httpPublications%29/AD29696D41CE69C3C1257D460033C267?OpenDocument

[8] International Social Science Council (ISSC), see: http://www.worldsocialscience.org/

[9] See "Greening of WTO" by R. Saner where trade policy options are proposed such as Green Trims, Greens Trips and Green Trilaterals, http://www.csend.org/images/articles/files/20130706%20Greening%20WTO%20Policy%20Study%20nr%202.pdf

[10] A. Leshner, "The Partnership of Scientists and Diplomats", Science & Diplomacy, 12 Dec.2014, file:///R:/users/saner/My%20Documents/14/Diplomacy/Sciences%20&%20Technology%20Diplomacy/The%20Partnership%20of%20Scientists%20and%20Diplomats%20_%20Science%20&%20Diplomacy.htm

1. Data Definition that is based on_stakeholder participation to ensure inclusive policy priorities and criteria.
2. Data collection and dissemination procedures for tracking the entire SDG implementation process.
3. Reporting format for collecting, sorting, storing and retrieving data for statistical analysis.
4. A participatory approach to micro-foundational monitoring in order to capture the sub-national diversity and disparities in terms of multidimensional poverty and varied pathways in attaining sustainable development.
5. Visualisation at subnational level for whole system mapping and "at-a-glance" reporting for easy comprehension and priority setting
6. Periods for management review against agreed evaluation criteria.

These components need to be developed and streamlined into a SDG monitoring architecture in order to capture the practice and progress of SDG implementation at national, regional and global level.

To create such a user friendly monitoring technology presupposes access to sophisticated IT and social science technology which developed countries can muster in contrast to their colleagues of DCs and LDCs who depend on support from developed countries which in other words means implementation of SDGs will required capacity building and willingness of the highly developed countries to share their science and technology with less privileged partner countries.

In closing, it is useful and fitting to cite Bill Gates's statement made during his interview at the WEF Davos meeting in 2008[11]

> There are billions of people who need the great inventions of the computer age, and many more basic needs as well, but they have no way of expressing their needs in ways that matter to the market, so they go without. If we are going to have a chance of changing their lives, we need another level of innovation. Not just technology innovation, we need system innovation

Indeed, we need such a system innovation. Science Diplomacy could greatly help the international community achieve such a system innovation which in turn will increase the chances of a successful implementation of the SDGs at national, regional and global levels.

[11] Bill Gates: World Economic Forum 2008, file:///R:/users/saner/My%20Documents/14/Diplomacy/Sciences%20&%20Technology%20Diplomacy/Bill%20Gates%20%20World%20Economic%20Forum%202008%20_%20News%20Center.htm