

**INTERSESSIONAL PANEL OF THE UNITED NATIONS COMMISSION
ON SCIENCE AND TECHNOLOGY FOR DEVELOPMENT (CSTD)**

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Contribution by Switzerland

to the CSTD 2020-2021 priority theme on “Using science, technology and innovation to close the gap on Sustainable Development Goal 3 on good health and well-being”

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PRIORITY THEME 2: Using science, technology and innovation to close the gap on SDG 3, good health and well-being

United Nations Commission on Science and Technology for Development (CSTD)

Dear CSTD member,

As you are aware, the CSTD 23rd annual session selected “Using science, technology and innovation to close the gap on SDG 3, good health and well-being” as one of the priority themes for its 23rd session (2020-21 period).

Science, technology, and innovation (STI) can play an important role in strengthening the capacity of all countries, in particular developing countries for early warning, risk reduction and management of national and global health risks as described in SDG 3D. Data science, biomedical science and engineering and other technologies can broadly transform health and medicine and specifically support countries and regions in their responses to emerging health crises as well as in their preparedness for future threats. Beyond specific technological innovations, STI policy advice, diplomacy, and international cooperation also play a prominent role in current and future infectious disease preparedness and response. The theme will explore experiences about using STI to strengthen health outcomes as well as approaches to regional and global STI cooperation in this field.

The CSTD secretariat is in the process of drafting an issues paper on the theme to be presented at the CSTD inter-sessional panel meeting. In this context, we would like to solicit inputs from the CSTD members on this theme. We would be grateful if you could kindly answer the following questions based on your experience from your country or region.

1. Can you give examples of projects/policies in your country aimed at using science, technology, and innovation for early warning, risk reduction and management of national risks? What are the main outcomes? And What are the main challenges confronted while trying to implement these projects/policies in your country or region?

2. Can you provide examples of policies/projects/initiatives aimed at strengthening national health innovation systems? For example, how does your country build innovative capabilities through investments in R&D and human capital? What institutional and regulatory arrangements are in place to stimulate healthcare innovation and effectively address safety, ethical and other concerns?

3. Could you share case studies of regional and international cooperation that have strengthened health capacities, particularly in developing countries? Can you provide success stories involving regional or global cooperation in academic research networks, STI diplomacy, or initiatives to make healthcare innovations accessible for all?

In the context of its development and cooperation efforts, Switzerland has been especially active in two areas, namely Open Insurance Management Information System (IMIS) and Dynamic electronic decision trees for managing childhood illness (DYNAMIC).

OpenIMIS

openIMIS is the first open source software that supports the management of social (health) protection schemes. It links beneficiary, provider and payer data. It is a powerful tool to strengthen strategic purchasing of health services and digital processing of health system data.

With support from the Swiss Agency for Development Cooperation (SDC) in 2012, an IMIS was developed to operate community health funds (CHF) in several districts of Tanzania. In 2014, a mutual health insurance scheme in Cameroon adapted the software. Since 2015, the German Development Cooperation (GDC) has been providing assistance to customize IMIS for Nepal’s national health insurance scheme. The software has grown organically and has demonstrated potential for easy adaptation to different types of health financing mechanisms needed for UHC. In 2016, GDC and SDC invested jointly to make IMIS an open source application. The openIMIS source code is publicly

available since 2018. SDC and BMZ are launching a catalytic fund in 2020 in order to allow new countries and initiatives to adapt and use the software.

openIMIS is ...

- free to download, customize and use. It is a global good.
- adaptable, modular by design, compatible with different schemes and country needs.
- interoperable with various formats and interfaces for data exchange (international standard protocols and codes).
- Sustainable, driven by the openIMIS community and supported by the global openIMIS Initiative.

openIMIS has a modular and adaptable design. The modules cover the following business processes:

- Enrolment and contribution collection
- Beneficiary verification
- Claims management
- Client feedback
- Data analytics and reports

openIMIS has a front-end interface that allows for quick registration procedures even in remote rural areas and can be used online and offline. The modules can be customized to specific country and organizational needs.

openIMIS is interoperable and is designed to help to solve the data fragmentation puzzle. It interfaces with other IT tools in the health and social protection sector to connect data sources and users.

openIMIS uses international standard protocols and codes (e.g. diagnosis codes) and requires services from multiple standard health sector applications (DHIS2, medical records) and beyond (e.g. civil registries).

Dynamic electronic decision trees for managing childhood illness (DYNAMIC)

Every year, more than five million children die before the age of five due to preventable or treatable causes, most of them in developing countries. New technologies combined with rapid tests can improve diagnosis and management of sick children and reduce health costs. This collaborative research project makes use of Switzerland's knowledge in digital technologies to improve the health of children and reduce unnecessary antibiotic prescriptions in low resource settings.

With the support of the SDC, the DYNAMIC Research project will test in Tanzania and Rwanda an innovative "health system strengthening" approach, whereby various players in the health system are supported in a first instance on the supply side (Primary health care providers and health managers both at local, regional and national level) but also to some extent on the demand side (current and potential users of primary health care services). The project includes several implementation research activities that will allow to understand the facilitating factors for this intervention, to better prepare future scale-up in Tanzania and Rwanda, as well as other lower middle income countries.

The **ultimate goal of DYNAMIC in Tanzania and Rwanda is:**

- To improve the quality of care for children (0-12 years) in low resource settings by implementing a novel point-of-care clinical algorithm (ePOCT +) that helps guide and train health workers in the diagnosis and management of sick children.

The implementation of an electronic clinical decision support algorithms (ePOCT) ultimately contributes to improve the health of children and reduce unnecessary antibiotic prescriptions in low-resources settings.

Expected outcomes of DYNAMIC are:

- Outcome 1: integrated management of children with acute illnesses at primary care level is improved

- Outcome 2: The national health information system for disease surveillance and early epidemic detection is enhanced
- Outcome 3. Clinical algorithm are improved and continuously adapted to geographical and seasonal variations using machine-learning
- Outcome 4: Antibiotic drug pressure in the community is decreased
- Outcome 5: The environment for sustainability of electronic clinical decision support algorithms and framework for larger-scale implementation is supportive

In short, the DYNAMIC research project seeks to investigate the decrease in morbidity and mortality, the improvement in terms of rational use of diagnostics and medicines and the level of efficiency of primary care for children under 12 years of age through improved diagnosis and management of sick children. This will be achieved through the assessment of the impact of electronic clinical decision support algorithms (ePOCT) across several domains:

- Community/caregiver sensitisation and engagement
- Healthcare worker knowledge and skill development
- Integration of tools into the health system
- Commitment by international, national and sub-national stakeholders

The intervention will consist in the use of ePOCT tool by healthcare providers working at primary care facilities during their medical consultations with pediatric patients presenting an acute medical problem. It will include the utilisation of new selected biosensors or rapid tests embedded in the ePOCT algorithm.

The project is articulated along four operational arms corresponding to the intended research outcomes:

- i. development, adaptation and validation of ePOCT to other age groups, clinical status and epidemiological settings (Tanzania and Rwanda);
- ii. improvement of the national health information system for disease surveillance through data generated by ePOCT (eMergence platform);
- iii. adaptation of ePOCT using the data generated by eMergence and machine-learning analytics;
- iv. facilitating the integration of ePOCT in the national health information and surveillance system.

ePOCT is a technological innovation designed to create sustainable, system-wide contributions, including health worker training, reduction of antibiotic prescriptions and the systemisation of data collection, management and use. ePOCT shows potential for scale-up in other settings as digital algorithm tool developed will be flexible both from the IT and from the medical point of view. It will be based on an open software that can be interfaced with any digital platform and can be adapted to new guidelines, modified at any time to take into account health system constraints such as stock-outs, and to integrate changes in diseases transmission and epidemics. At the end of the project, the Rwandan and Tanzanian national governments, as ultimate owners and users of ePOCT + and its data, should have the necessary tools for further national scale-up. This will be facilitated through the development of a software allowing health authorities to modify the e-algorithms without the help of software programmers. Unisante is currently looking to establish an independent Foundation (with support from Unitaïd), which would provide technical support to users of digital clinical algorithms with service prices adapted to economic capacities. This will also support potential future scale-up of ePOCT.

DYNAMIC is implemented by a research consortium under the lead of Unisanté, University of Lausanne, and SwissTPH, University of Basel, and mainly financed by the Botnar Foundation and the SDC.

4. Could you suggest some contact persons of the nodal agency responsible for projects/policies, related technologies and international collaboration in this context as well as any experts (from academia, private sector, civil society or government) dealing with projects in this area? We might contact them directly for further inputs or invite some of them as speakers for the CSTD inter-sessional panel and annual session.

Contact: Nathalie Wyser : nathalie.wyser@eda.admin.ch

5. Do you have any documentation, references, or reports on the specific examples on the priority theme in your country or region?

Contact: contact@openimis.org

openIMIS web

<https://www.openimis.org/>

openIMIS demo

<https://openimis.org/demo/>

openIMIS source code

<https://github.com/openimis>

Please send your responses and any further inputs on the theme to the CSTD secretariat (stdev@unctad.org) by 7 October 2020. We look forward to receiving your valuable inputs.

Sincere Regards,

CSTD secretariat