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

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17-19 November 2021

Contribution by Switzerland

to the CSTD 2021-2022 priority theme on "Industry 4.0 for inclusive development"

PRIORITY THEME 1: Industry 4.0 for inclusive development

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

Dear CSTD member,

As you are aware, the [CSTD 24th annual session](#) selected "Industry 4.0 for inclusive development" as one of the priority themes for its 25th session (2021-22 period).

This priority theme is directly relevant to SDG 9 on industry, innovation and infrastructure. As highlighted by the [Technology and Innovation Report 2021](#), we live at the beginning of a new technological revolution around Industry 4.0 technologies such as AI, robotics, Internet of Things, and blockchain. The way to be prepared to benefit from Industry 4.0 is by promoting the use, adoption, adaptation, and development of technologies associated with this new technological wave. This priority theme will focus on the challenges and prospects for developing countries to pursuit an industrialization path considering the emergence of Industry 4.0. This may include the possibility of bypassing intermediate stages of technology that other countries have historically passed in their development process, often referred to as "leapfrogging". The priority theme will cover the impact of this new technological revolution on the traditional channels for technological learning, and innovation in developing countries, including FDI and participation in Global Value Chains. It will examine the opportunities for "leapfrogging". It will also consider the role of public policies in enabling vulnerable groups and communities to benefit from Industry 4.0, including through better and more equitably accessible jobs.

Questions to be addressed include: How can developing countries take advantage of the window of opportunity presented by the Industry 4.0 technologies for technological upgrading and catch up? What can countries do to ensure that Industry 4.0 does not increase inequality? What is the role of international cooperation in facilitating this process?

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 on 17-19 November 2021. 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. What are the national strategies, policies, laws, programmes and initiatives concerning Industry 4.0 in your country?

    The Federal Council is accompanying digitisation with its horizontal umbrella strategy "Digital Switzerland". The strategy comprises various fields of action (i.a. economy, research and innovation, artificial intelligence etc.) and an action plan with around 160 measures. The strategy is based on a multi-stakeholder approach and is updated regularly. In its current version, a sepecial focus is laid on environmental issues and data policy.

    There is no official strategy or program regarding Industry 4.0. Switzerland has an innovation policy that is not structured within the framework of a single comprehensive "innovation strategy", but rather in a decentralised manner and within several independent policy areas that are coordinated as needed. This gives individual actors in R&D and in the corporate world a high degree of autonomy; on the other hand it enables precisely tailored responses to address new challenges and harness new opportunities. This "bottom-up" approach also applies in principle to Industry 4.0 as a sub-area of digitalisation.

    Switzerland is focusing primarily on creating optimal framework conditions for various types of business models, including the digital economy. In connection with digitization and/or Industry 4.0, Switzerland does not provide targeted subsidies for industries and/or technologies. To fully exploit the economic potential of digitisation, Switzerland pays particular attention to the framework conditions in the following areas: Education and further education (digital skills etc.), the research environment, data protection (legal security, trust), cyber risks and efficient and secure ICT infrastructures. In addition, necessary regulatory adjustments are being tackled (e.g. Fintech) and digital government services promoted.

The private initative Industry 2025 is the national initiative with the goal of driving forward the digital transformation in the Swiss manufacturing sector. It brings together stakeholders, structures and deepens existing knowledge and experience, and makes them freely available. It ensures the introduction, support and embedding of Industrie 4.0 concepts in added-value networks and production companies. Industrie 2025 was founded in June 2015 by various industry associations (www.industrie2025.ch).

From a labour market policy point of view, the guiding question is how to enable labour markets to cope with structural change in general and more recent phemomena such as industry 4.0. For Switzerland the following elements are of particular interest in a phase of rapid change:

- *Promote a business environment conductive to growth and job creation. Competition is a motor for innovation and productivity growth. Labour market regulation has to enable the reallocation of workers towards the most productive firms.*

- *The supply of skills has to be permanently adapted to changing labour market needs. In Switzerland – with its dual apprenticeship system - the link between education and the industry is tight. We believe that the cooperation between the education and the business sector will be a cornerstone of successful skills-policies in the future.*

- *The adaption of skills (among those also digital skills) will naturally be an issue for young people, but more often so for older persons as well. Preparing the adult workforce to work with new technologies will be a key focus of Swiss skills policies in the coming years.*

- *Protection of workers against labour market risks has to go hand in hand with incentives and support to find new jobs. Activation is central in the Swiss unemployment insurance. In times of rapid structural change activation can also help workers to move from shrinking to growing sectors.*

2. What are the key industries that are pioneer Industry 4.0 innovation in the country? List the key actors in the national ecosystem of innovation related to Industry 4.0 in your country (firms, universities, financial institutions, regulators)? What are the key networks of the ecosystem in your country (including online networks, innovation hubs, forums, etc.)?

Cf. above/below (question 6)

- *Economic actors organise themselves in numerous initiatives that deal directly or indirectly with the topic of Industry 4.0:*
    - *Industrie 2025: https://www.industrie2025.ch/fr/*
    - *Swiss Smart Factory: https://www.sipbb.ch/en/forschung/swiss-smart-factory/*
    - *Swiss Data Alliance: https://www.swissdataalliance.ch/*
    - *SwissCognitive: https://swisscognitive.ch/*
    - *Digitalswitzerland: https://digitalswitzerland.com/de/*
    - *Crypto Valley: https://cryptovalley.swiss/*
    - *Trust Valley: https://trustvalley.swiss/en/*

In addition to these activities, companies are pursuing their own projects. With respect to AI, they address aspects such as ethical guidelines, the responsible use of AI or similar topics in order to promote trust in products and services in which AI is used.

- *Most Swiss higher education institutions, ETHs, universities and universities of applied sciences are heavily involved in the subject of AI, robotics, Internet of Things, and blockchain, from a wide variety of perspectives (some examples below):*

- o *Institute of Robotics and Intelligent Systems: https://www.iris.ethz.ch/*
- o *Istituto Dalle Molle di Studi sull'Intelligenza Artificiale IDSIA: https://www.idsia.ch/*
- o *Institut de recherche IDIAP: https://www.idiap.ch/fr*
- o *Swiss Data Science Center SDSC: https://datascience.ch/*
- o *Datalab – The ZHAW Data Science Laboratory: https://www.zhaw.ch/de/forschung/departementsuebergreifende-kooperationen/datalab/*
- o *UZH Blockchain Center: https://www.blockchain.uzh.ch/*
- o *EPFL Center for Intelligent Systems and Innovationpark*

3. What are the challenges that your government have faced or may face for promoting Industry 4.0 in your country to contribute to national development priorities and accelerate the progress towards the SDGs?

   No specific official promotion programs, cf. above.

4. What should governments, the private sector, labour unions and other stakeholders do so that developing countries can benefit from these technologies?

   Cf. above (question 1; aspects around labour markets, some of the guiding questions might be relevant not only to Switzerland)

5. What actions can the international community, including the CSTD, take to help your country take advantage of Industry 4.0 for inclusive and sustainable development?

6. Could you suggest some contact persons of the nodal agency responsible for projects/policies 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.

   Cf. above (question 2)

   Further experts from academia and private sector:
   www.industrie2025.ch => Team
   www.ethz.ch => MAS in Applied Technology
   www.zhaw.ch => Platform Industry 4.0
   www.fhnw.ch => Competence Center for Digitalisation and Industry 4.0 (in german)

   For any contacts to Swiss government agencies, please feel free to reach out to the Office for Communication (andrin.eichin@bakom.admin.ch) and/or the Mission of Switzerland in Geneva (alexander.schaerer@eda.admin.ch).

7. Do you have any documentation, references, technological assessments, future studies or reports on the priority theme in your country or region?

➤ *Report «Innovation in the Private Sector in Switzerland» (admin.ch)*

➤ *Initiative Industrie 2025:*
   - *use cases*
   - *Publications (german)*

➤ *Deloitte report Industry 4.0*

Please send your responses and any further inputs on the theme to the CSTD secretariat (stdev@unctad.org) by 6 September 2021. We look forward to receiving your valuable inputs.

Sincere regards,

CSTD secretariat