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REPORT

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Christopher Awinia, the Open University of Tanzania, Tanzania
Uttam Bhattacharya, Institute of Development Studies Kolkata, India

Moderator:
Gabriela Tejada

1. Welcome and introduction by Gabriela Tejada (GT)

The 2030 Agenda for Sustainable Development has been in effect since January 2016 and calls on all UN member states to contribute to the achievement of the 17 Sustainable Development Goals (SDGs). In Switzerland last week the Federal Council adopted Switzerland's country report on the implementation of the Agenda, which will be presented at the UN in New York next month. Worldwide other countries are doing the same. This panel is relevant and timely. The 2030 Agenda targets a wide-range of global issues, from extreme poverty to climate change, enhancing the role of science and technology in sustainable development. Many national and international initiatives and actions are being implemented aiming at people, planet and prosperity. In this process, all actors have a role to play to ensure that human welfare and planet sustainability are kept at the center of the equation. Evidence based policies are necessary to advance the SDGs. Dialogue between scientists and practitioners is crucial to encourage co-production of innovative solutions involving diverse stakeholders. How to foster this in practice? What are the main challenges? What are the opportunities?

By organizing this session, we aim at:

- Bringing together several stakeholders to present and discuss programs and practices that have reinforced science, society and policy interconnections towards the SDGs.
- Identifying main obstacles and enablers therein.
- Discussing examples of successful multi-stakeholder partnerships that have effectively worked in the implementation of the 2030 Agenda.

Thank you for joining. Thank you to the panelists, who come from different countries representing academia, civil society, policies, and multilateral organizations. Together we aim at an interactive session and for that we count on you. A report of the session will be drafted and circulated.

2. Panelists express their primary motivation for contributing to this panel

Susan Schneegans (SS): The UNESCO Science Report has a chapter summarizing the findings of the UNESCO Institute for Statistics' first innovation survey of 65 countries. I thought conference participants might be interested to learn that the study found a low level of collaboration between universities, research institutes and industry, despite these ties being an important target of policy instruments. For 40 years, it has been the staple of science policy that university-industry collaboration is desirable and should be fostered, ever since the Bayh Dole law was adopted in the US in the 1980s. The Bayh Dole law authorized universities to keep the intellectual property of the products and processes that they had developed using federal funds. So this law is really point zero of university-industry collaboration and it has been copied in many other countries, such as Japan. Policy instruments are the means by which you implement policies. They could be study grants, competitive research grants, awards, legislation, all the arsenal that a government uses to make sure that it achieves its policy objectives. The surprising findings of this survey should be of concern to policy-makers. We need to find out why this is happening and to design better policy instruments. My second motivation in coming here today was that I thought participants would be intrigued to learn that the results of the survey were similar for low-, middle- and high-income countries. Through concrete examples, I wish to explore with conference participants the obstacles to, and enablers of, collaboration.

Melanie Marcel (MM): I created a company named SoScience and our goal is, when we talk about responsible research and innovation, to create science innovation and technology that has good implications for the society and can really be fostered through collaboration with society. One thing that we believe in is the fact that it is impossible to answer the challenges we face today only by one actor: if you are an industrial, a research institute, or a social entrepreneur. You cannot actually have an answer to the challenges we face if you do not collaborate with others. But as it was said, collaboration is very low today and that is why I wanted to participate in this session, because we have developed an innovative program in partnership with a research institute, industrials, social entrepreneurs, NGOs, etc. The idea is to have collaboration created between very different actors and I wanted to share that program because it's quite new. It first started in 2016 and it is working very well. So I wanted to share the results and I am also interested in learning what is happening in other countries and what other models are there, and how we can build something that works for a lot of places and countries.

Debashis Bandyopadhyay (DB): My first motivation was the session title "the research and policy nexus in implementing the SDGs" because the discussion could include our experiences in disseminating and deploying technologies in CSIR and its laboratories. At the level of stakeholders, we essentially work with small and medium enterprises (SMEs) which constitute one of the major back bone of India's economic fabric. They contribute more than 8% of GDP and 46% of the manufacturing output. But we do not really have a seamless connection between research infrastructure, structure and overall procedures in which research is undertaken (on the one hand), and the basic policies providing an enabling framework to the stakeholders (on the other). We do not have that level of seamless connection between the two in order to further promote and advance the SMEs. Based on our experience, what we have seen is that out of a large number of very well performing SMEs in India, not all of them, use sustainable practices. That is where we are right now. But the concern is during implementation of the 2030 Agenda where India is bound by several treaties, (all countries are bound by treaties to achieve it). Many of these enterprises will find it very difficult to survive unless they adopt the sustainable development practices from today and align their production process with the SDGs. But we have only 12 years to do this. Actually, time is too short and too many things need to be done within this period, and this is why the type of interaction that we are having today is very important. Given the lens of this Tech4Dev Conference, with participants from so many countries, it is important to co-learn from the experiences of different countries and to leave with at least something to make up for the lost time and reach our goals.

Christopher Awinia (CA): My motivation was on the real world-policy nexus. My work is involved in working with the Commission of Science and Technology in Tanzania to bring in social science, so that it contributes to research, innovation in the overall macro-economic level which is only industrialization. In the past, most research has been on natural science, mechanical and biotechnology with only little scaling up at the macroeconomic level. With industrialization coming, everybody is asking about the social science questions and how can they be integrated in the process to lead to the SDGs.

Uttam Bhattacharya (UB): The SDGs are very important; most of the people have accepted their importance. So my motivation was to exchange my ideas and to gather more thoughts for our students in India, where I am teaching and involved. Also to bring some ideas to the country, to the policy makers and industries so, based on our experience, they can see a way to learn from this

session. I do not think Indian people are much aware, nor committing, or much moving to the SDGs, despite their importance. So what I am going to do is to gather more knowledge and share it with my students and it will be a good benefit for them.

3. Questions to the panelists from GT

Question to MM: The French National Institute for Sustainable Development (IRD), created in 2016 the Innovation Campuses for the Planet, with the implementation of various programs in different countries that end up with innovative science-based solutions towards the SDGs. Co-creation of research involving the society and diversity of partners are two of the key components of this approach. Tells us how these innovative research campuses work and why are they considered successful. Tell us also what SoScience does, as a good practice of science and society interface.
Answer: It is a quite new initiative. It started in 2016 and the idea is to create physical campuses inside the research institutes that could work as a place where people from different fields can meet with scientists. For example you can have citizens, NGOs, researchers on campus, and also researchers from other institutions. It is a very diverse crowd, and the idea is that this place, these campuses, are open and they are animated through a wide range of activities, conferences, programs, etc. The first one was launched in Bondy near Paris, and very soon they replicated the model in different countries, for example in Senegal and in Burkina Faso. One program that is being implemented on this kind of campuses was developed between the French National Institute for Sustainable Development and my company SoScience. The name of the program is "The future of" and every edition has a specific theme. For example the last one was named "The future of waste" and we focused on the question of fruits and vegetables waste valorization for a positive (nutrition or health) impact, and around this theme we gathered together between 30 and 50 participants, who are professionals of waste, because for example they work at NGOs attacking the issue. They can also be professionals because they are scientists, chemists for example, working in 'valorization' of co-products in the waste treatment. The idea is that everyone is an expert even if you are not an expert on the same things. It is not only being a scientist that makes you an expert, it is also knowing the problem you are talking about. We make a call for proposals and make clear from the beginning when people apply that the goal of the program is to create research collaborations, so participants have to be willing to collaborate with different stakeholders. We select 30 to 50 participants: researchers, startups, industrials, sometimes major industrials, NGOs, social entrepreneurs (that we call the social Sci-preneurs). Then they gather together on these campuses for one day of co-creation and we animate this day. At the end of the day they have created their collaborative research project. For "The future of waste" that is what happened. This particular day happened two weeks ago and at the end of the day with 50 participants, we had 20 research projects that emerged. This number shows how successful it is. In fact, people coming know that at the end of the day they need to have created something together. To be sure that something concrete is going to happen, SoScience does a follow-up for up to 6 months on the most promising collaboration project that emerged. For example, on our last program we had some participants that hired a master student, another hired a PHD student, others decided to apply together to a European program asking for research funding. The idea is to make this collaboration more concrete and it is working really well because there is the will both from researchers and society to collaborate. This innovation campuses provide the space to do so, and today we lack this kind of very specific spaces to meet and to enable this kind of collaboration

Question to SS: A study done by UNESCO Institute of Statistics (UIS) in 2013 and 2015 observed that most manufacturing firms active in innovation, both in high- and low- income countries, do not interact with public research institutions at all. What are the reasons behind the lack of ties between university and industry? How urgent is to revert this trend to realize the 2030 Agenda?
Answer: I was very surprised by the findings myself. Japan and the Republic of Korea are countries that devote some of the largest shares of GDP to R&D. We would imagine these countries would value public-private collaboration, but that was not the case. Most of the countries here on the graph on the left side are OECD countries in Europe, and Italy is at the right, extremely low. But even in Finland, which scores highest, only one-third of innovation-active firms collaborate with academia. So we looked to the questionnaire itself and to the *UNESCO Science Report*, which examined global trends between 2010 and 2015 by country and by region, for some answers. Those surveyed about their own behavior often stated that they prefer to do their research in-house rather than outsourcing - you can see this on the poster. This partly has to do with the question of confidentiality in the business world, with the secrecy that is necessary to protect an innovation. Another reason given for the low level of university-industry collaboration was that firms considered their own sources of information to be of greater value; this includes staff, clients and suppliers. This is true for all categories of countries. One reason that was more specific to developing countries was that, because their innovation system was less mature, they were more likely to invest in the acquisition of equipment, infrastructure, and software than R&D. This makes sense, if you have a fledgling company. The UNESCO Science Report provides additional answers by contextualizing the situation and analyzing national economic policies. Economic policies can have a big impact on the way industry

behaves and the interest generated in innovation. The report describes how, in Argentina and Brazil, for instance, protectionism of the domestic market from foreign competition stifles innovation. The report found that Brazilian companies do not really need to innovate because other Brazilian companies are not innovating either. Thus, they do not face competition from either inside or outside the country. During the commodities boom, the level of innovation in Brazilian firms actually declined. So too did exports, including high tech exports. So Brazil started going backwards in terms of innovation, even as spending on R&D increased. Another interesting example is the Russian Federation (RF). During the boom, the RF earned a lot of revenue from gas exports, d so it was very easy for Russian companies to import sophisticated technologies because they had so much cash. So, that was also a disincentive for the Russian companies to innovate. There are other structural reasons highlighted by the report, such as the high cost of doing business in some countries or the high cost of innovation, or poor protection of intellectual property. There was a study done recently on Russian techno parks (where you bring companies, universities and research institutes together around universities) which found that a lot of techno parks are not performing well because there was so much red tape. They had great trouble actually becoming operational. A lot of them existed only on paper. So the list of factors hindering and enabling collaboration (in my poster) is actually a reference to economic policy instruments. Policy instruments are what you use to implement policy, such as legislation, tax reductions, etc. Governments have implemented some policy instruments to try to motivate universities and industries to work together. There are some interesting ideas. For example, in India, the government doubled the amount of the doctoral fellowships for students if their thesis topic was initiated by the student's industrial partner, to encourage students to work with industrial partners. This policy instrument is a win-win situation because it promotes multistakeholder collaboration. One of the most interesting examples of effective policy instruments, I think, are the three case studies from Brazil, Morocco and Malaysia. These are funds with tax industries to pay for research with the industry. In Brazil there are sectorial funds that have been set up since 1999, in oil and gas, information technology, energy, agriculture, etc. to encourage public companies to innovate. For example, the electricity companies have to give part of their turnover, a very small proportion, about 0,2%, to a national fund for R&D which invests in research and electricity generation. Now, obviously with the SDGs, one of the aims is the development of renewable energy, so this fund can be very useful in orienting state enterprises in Brazil, which are very big and powerful, to focus their research on areas that are going to help sustainable development such as solar energy, wind energy and climate-smart agriculture. So, these policy instruments can really be a tool for encouraging companies to innovate. If companies do not move towards more sustainable technologies, they are going to become uncompetitive because the Republic of Korea, for example, is going ahead with green technologies. Global markets are leaning more towards green technologies, so governments need to help companies to compete in these new markets.

Question to DB: SMEs represent a major driver of economic growth in India, contributing to 8% of the GDP. In your study you show how public policy (especially from local governments an innovation institutions) is facilitating the technology landscape associated with SMEs in India to advance the 2030 Agenda. Which other key actors are involved and which role they play?
Answer: As I have already mentioned that SMEs constitute one area. So, basically, this is an example of a multi-stakeholder partnership, where we have three major stakeholders: the government, the firms and the R&D institutions, which I include in a wider context covering R&D institutes like our CSIR, DST, and others and also the academic institutions (which includes the universities, the Indian Institutes of Technologies etc.). As we talk about actors it is important to see the way these are interacting with each other in advancing the SDGs in terms of SMEs. There are several other tracks in which this can happen. To keep a greater focus on the discussion, I have not talked about any other thing apart from the SDGs. The SDGs component of the SMEs that is being used is little blurred. I will give you a few examples. In the context of the SMEs, mainly eight of the SDGs can be roughly mapped: 1, 3, 5, 8, 9, 11, 13 and 17. Out of them, if you find out what are the major imperatives to achieve these goals in the context of SMEs in India it would also include certain things, like the livelihood created in clusters that should be sustainable; that communities involved should be subjected to adequate assistance, or that living environment should be inclusive. These are some of the areas where most of the SME clusters are not very compliant with other SDG's. The second aspect is the industrial processes that are adopted. They have to be clean, they have to be safe to the environment and finally the production value chain has to be appropriate in maximizing the output of SMEs. Also, the latest technologies through capacity building should be used to enhance capacity of the stakeholders. If you look at the overall landscape of what we have seen for SMEs, there is an element of informality in their approach. From the informal it goes to formal, and it begins with household units, basically. Most of these forms of SMEs in India especially some areas where we work in the Eastern part of India, they comprise initially a household unit, which eventually will mature and evolve into self-help groups, until finally they become a SME. This SME improves with the size and the value chain approach, which includes initial industrial development and capacity building that make them familiar with technology facilitation, and finally the technology translation and adaptation. So, if you look at this value chain of skill, capacity, technology facilitation and translation, several institutions will come into the picture. Skills development mostly take place through NGOs and informal mechanisms. Capacity building and technologies facilitation are other places where more academia, educational institutions and

again NGOs and other types of people come into the picture. Translation is an area where there is a major role for organization like CSIR (industry - research institute partnerships), and finally it goes for technology transfer and technology adaptation and adoption, which would give rise to areas with several forms of incubation and start-ups. This gives us an overview of the major actors who are involved in the overall SMEs value chain and SMEs development in India.

Question to CA: In your paper you describe how the Tanzanian Commission of Science and Technology (COSTECH) provides funding for research and innovation to advancing the SDGs in Tanzania, and implements various strategies aiming at strengthening the research and policy nexus for greater development impact. Tell us about those strategies and their successes or failures.
Answer: There is a desire to create a social app, there is an ICT app, technological app, biotechnology mechanical app, but what contribution could social science do in social innovation towards industrialization? Tanzania has shifted its macroeconomic framework from focusing on poverty to focusing on growth. And the strategy of reducing poverty is now embedded in growth and their goal is industrialization. The cost-tech is now trying to wake around, to look at how it can have a better strategic fit in social science research to support industrialization. One strategy was to develop a national monetary framework for social research and innovation. My work was to inform these strategies on how can they effectively have an impact? Knowledge management is one of them, but before going there we have a challenge on how to conceptualize the contribution of social research in industrialization. There my work involved interviews with a research and innovation organization looking at their own growing research and it did not have a strategic fit to social science contribution to industrialization or inclusive sustainable industrialization as the SDGs demand. There are some key areas within the system, based in conceptualization. One is the concept of social transformation, which precedes and manages societies, before they go into industrialization and these steps have far reached social dimensions which need to be studied and informed. First reduction of agriculture as a contribution to GDP; increased urbanization or migration from the rural to urban areas; and then industrialization. But that has to have some other entry points such as skilled labor force or social positioning and then it is when you can have a demographic transition and what I call massification of the SDGs. Not SDGs in bit and pieces as poverty reduction will do, but one where the economy will take up and fulfill rights, fulfill needs beyond basic needs for the economy as an all. And there is where we see social research can answer those questions. COSTECH has published national priorities for research giving a code on areas where social research will contribute. Ongoing research is still ad-hoc and not focused; therefore, knowledge management platforms are what we recommend for focusing that research, building the research communities around areas and sub-areas, promoting learning across research institutions and having maximum impact. There is already a knowledge management platform in Africa, the learning management platform on ASTI (Africa Science and Technology Indicators). However, what COSTECH has been doing is just filling questionnaires and sending that information to headquarters. They have not adopted the knowledge management platform to international level. The recommendation of my study is that if they adopt that model then they can have a better focus, learn and build a team on social research to support structural transformation for inclusive and sustainable industrialization.

Question to UB: In your paper you stress the problem of coordinating and monitoring the work of different stakeholders towards SDGs policy. Base on field experience in Sundarbans in West Bengal (a rich bio diversity area), tell us how different stakeholders' capacities and actions are articulated, particularly how does the dialogue between researchers and policy makers is taking place.
Answer: My paper covers various states of India. Precisely about Sundarbans, in Eastern part of India, within West Bengal, the South part is Sundarbans. It is a delta area full of flora and fauna. There are about hundred islands within the Sundarbans area. The greater part is in Bangladesh. The thing is that of those hundred islands, in about 54 islands local people are living with many problems. The land position is very delicate. In anything related to the SDGs, the land and the people and the flora and fauna of that area should be all addressed. There is an effort to preserve the flora and fauna of the area, and also do good labor. Since the colonial period, various contrasting interests have been taken care of, not always for the benefit of the people but for the benefit of the commercial partners and this is still partly true until today. After independence, the Sundarbans areas have suffered a lot of modification. After 2009 Aila cyclone, it has become very important that if we do not take care of the nature and how to preserve it, it can be dangerous for the people, for the whole country and for the tiger reserve project located there. The number of tigers is very important and that number is always coming down because of many reasons. Sometimes the tigers are coming to the local villages and generate all sorts of hostilities. Addressing the SDGs is basically under the responsibility of the ministry of forest and environment. India is very governmental, so the State government and the central government are sharing the responsibility to pay attention to the local problems there. There are also several NGOs active there, particularly important is the Society for Rural Development, where I am involved to help address local major problems. The thing is that, when there are too many cooks, the food is not so good. Because there are so many organizations, there are problems of coordination. There are some specific problems that are not being addressed, while sometimes same problems are being dealt by several persons. Sometimes they are here for one year, for six months or not more than two years, and actually local problems should be tackled through more long term

projects, to preserve the nature, but this is not happening; also because most of the economic problems are mixed with political problems. Institutions are more interested in having more easy goals, and some agencies are giving attention to the immediate gains and not long-term projects. How to protect the forest, how to protect the tigers and the people involved at long term is not being given much attention. There are of course some golden exceptions. Many of the NGOs try to do something, but the questions of commitment and acceptance are major problems. Whatever the NGO, there is a need of monitoring and transparency within their function, otherwise with these too many stakeholders and without clear long term commitment and without enough funds we doubt of the result.

4. Questions and answers / discussion with audience (Part 1)

Carmen Dienst from the Wuppertal Institute. I would like to be a little provocative and say, ok there is not valuing of science and there is not enough policy or structure. But I think also that scientists are not proactive enough and are too focused on their research. When you look in the area of energy, there was in the last few years, three forums and there were like 900 people coming and when you count them all together there were only 10 to 20 scientist and the rest were mainly activists and lobbyists. And in parallel, there was a conference taking place talking about energy and development, but people do not go there. Often the problem is that scientists focus on their research and prefer not to go to other arenas.

Gaston Kremer from WTT Brazil. I work for a foundation linked to technology (WTT). Melanie, you mentioned stakeholders' partnership and I wanted to know about the methodology. How do you organize the stakeholders' participation and mutual collaboration? I came here to learn from the experience of others and I wanted to know from you, how to provoke academia from inside to engage stakeholders' partnerships?

Ashok Gadgil from UC Berkley Department of Civil and Environmental Engineering. I want to address the issue on how the academics in developing countries value research on development problems. The academic elite structures in the developing world is set up so that those professors publishing in "force one" journals on "force one" topics are valued high in academia. If they cannot get into that quality of research then they end up being considered as doing research for poor people in a third world country. That is the prevalent misunderstanding. If academics need to gain status, recognition and prestige in the third world institutions, they need to publish according to the deans and according to their departments' themes in "force one" journals where the main problems are not discussed. So, there is actually a disincentive to apply the best minds in the academics of the developing world to problems which are growing under their own feet because of the way their research is being valued.

Aurelie Righetti from the Swiss Agency for Development and Cooperation. We are implementing the Swiss program for research and global issue for development, which aims at encouraging research to engage more than just research. My question is to Melanie on the very basic concept of SoScience. You told us about the necessity to work with all different sectors and I was wondering how you do it. Do you have the same concept to work also across borders? Do you have virtual campuses or how do your team and other campuses work together? Can you explain that?

Adedoyin Adeleke from ISNAD Africa, which is an NGO that develops research and education for sustainable agenda in Africa. My question is to Susan. There is the issue of the influence of science on policies, and its real contribution and relevance. We should get research into high service research. Every time I travel going to conferences, there are speakers from academic institutions, as here. I've seen in Germany that private companies invest in academia because they see something reasonable in what the academia is doing. What is important is to convince the companies. In Nigeria the first issue is that even if we have good ideas and will to do something relevant, sometimes there is a lack of research quality. This is easier in developed countries; in Africa engineering research does not have the same facilities. Another issue is how research is communicated. I do not know how it works here. In developing countries many people are publishing in academic journals to get promoted. But politicians do not read journals. It is only academicians who are going to read journals, not the ministers.

Answer and comments by MM.
For me there is a systemic problem in the way we construct our research systems so that today they are really linked to what we call economic valorization. It is true that lot of funding comes from private institutions and the main idea is that we should use the results of research in order to transform it into something that will have some economic value. We measure it that way, and we strive for that and it's ok to do so. But we never ask the questions of measurements and policies and the creation of tools and

funding related to social valorization of the research results. There is a whole field that needs to be constructed and a whole system that needs to be changed to promote social valorization. That is an issue that will take decades. If we want to address these issues right now, the first thing is to try to understand why the system is not working today. It is important to realize that scientists also have a lot of pressure in the actual system. They need to publish, to find funds, they don't have time to do their actual research. It's extremely hard for them. This morning during the opening session the well-being of the change-makers and social change-makers was mentioned but the well-being of scientists, which is not very good, was not mentioned. So, those that are trying to do something good for the world, through very different manners or means, have also a problem of well-being. This is a deep problem in our society. People who are trying to do good for society are actually hurting themselves. With that much pressure it's really hard to get researchers on board: "not only you have to find funds, to publish, to communicate, but also, could your research please save the world?" We have tried to tackle that with our program. That is why for us collaboration is key, because the researcher needs to do his research and he has to understand the incentive for him in our program. Therefore, the meeting with the good social actors should not take him a long time and should be very effective. Through collaboration, researchers can continue doing research and publishing papers and looking for funds. At least, this kind of transformation of bringing research results to the society can be done through the collaboration with the social actors and social change makers. The incentive for the researchers to join our program is telling them that collaboration is the most effective way to be connected to the relevant social actors while they will still be having time to do their research. That is the part of the answer for the incentive part and how the program works.
On the international question that was asked, in our last program we had 17 countries represented with 50 participants. Research is a very international field. When you are a scientist, you are connected to the whole world. In our program everything is remote except for the one day when we convene everyone at the same place. So it's very international also. We can discuss more the model if you are interested later.

Answer and comments by SS.

I would like to address the question which has often been summarized as "publish or perish" in the academic world. When an academic's career advancement depends on his or her publication record rather than on the number of patents they develop, there is little incentive for the academic to innovate. A second problem is that researchers are encouraged to pursue excellence at the expense of relevance. In Fiji, for instance, researchers were publishing papers in quality international journals about diseases that were irrelevant to the Fijian context. The Fijian government, thus, decided to resuscitate the Fijian Journal of Health. Coming back to the 'publish or perish' dilemma, poor public policies are devised when there is no consultation with academia, industry and other stakeholder groups. In the absence of a broad consultation, policies tend to be designed behind closed doors and, thus, fail to take into account the reality on the ground and the concerns of scientists and engineers. There are some positive examples which have resulted from a board consultation. Here are a few from Africa, where there is a growing awareness of the need for science, technology and innovation to drive Africa's development agenda. Senegal has been developing its own science, technology and innovation policy after producing a slew of sectorial policies. In 2014, Senegal introduced a law creating the obligation for universities to ensure that half of the members of their governing board came from outside the university, including the private sector. This should help to create a stronger dialogue between academia and industry. Another positive example is Uganda. When the president decided to visit Makerere University about eight years ago, he was so impressed by the engineering team there that he decided to create an innovation fund for the university after listening to the students. Since then, they have implemented a lot of research projects. For instance, they developed the Kiira EV car and are now developing a solar-powered bus which they hope to manufacture if they can find sponsors. However, this was a spontaneous gesture on the president's part targeting a single university, rather than a systemic policy. Also, many innovation hubs have been set up in Africa in recent years, some by multinational corporations. In Kenya, you have Microsoft and other companies which are sponsoring young tech entrepreneurs. In Kenya, there is a very dynamic IT community that is producing and selling commercial apps and other innovative products. The government, which was not an initial sponsor, has recognized the economic benefits of this dynamic activity, which has created a veritable industry in Kenya. In 2013, the government decided to set up technology incubation hubs in all 47 counties and, in 2015, to devote 2% of GDP to R&D, more than any other African country. So this is a case where young academics working with the private sector have created a new reality that has attracted the government's attention. This has led to an increase in domestic spending on R&D, whereas many African countries depend on foreign donors for much of their research funding – 40% in some cases - which may compromise the freedom of research, since donors tend to want to set the research agenda. It is important to reduce the role of donors in dictating the focus of research. African governments are conscious of that now but it is extremely important for them to surround themselves with specialized advisors and to listen to different stakeholder groups. There also needs to be better coordination and accountability among government ministries. If they pull together, the Ministry of Finance, the Ministry of Industry, the Ministry of Science and Technology, the Ministry of Education and the universities themselves can help to bring about this transformation. I want to deliver a positive message, as I think things are changing in East Africa.

Answer and comments by DB.

I have some success stories linked to the question regarding provoking academia from inside and also why publishing papers in great journals not necessarily have relevance in the country which it is worked on. There are examples in India right now where this is beginning to change. I can cite one program of the Ministry of Higher Education and the Department of Science and Technology, which was launched in 2015. It is impacting research innovation and technology called IMPRINT. This originally came out of a policy dialogue with the United States initiated along with Indian industry. This program has been in ten major domains that are basically driven by higher education, and academia and all the Indian Institutes of Technology (IITs) are involved. This is an example of a very good multi ministry initiative where 29 ministries of the government of India are involved. Currently there is also effort proposal to include provincial governments, which are the local governments of the different states of India. The actual aim of this project is seen by the way it is assessed, as the deliverables will not comprise of simply publication but a product which will solve some of basic problems in these 10 domains. For example, if it is in the energy domain, the issue has to be tackled in such a way that it solves some of the problems in this domain. The first exercise is to create a policy and a road map for getting some of these examples of what needs to be solved. Other important aspect of this initiative is the need to have an industrial partner, different ministries, as well as academia and R&D institutions. It is a matter of incentivizing and controlling the funding. I am with the Council of Scientific and Industrial Research, which is the largest public funded organization in India holding the largest number of patents. What we have seen is that when we try to transfer a technology, most of this technology transfer will be taking place in supply innovation mode. It is innovation that has come out of the laboratories and we are trying to push those technologies and innovation to the stakeholders rather than adopting a pull mechanism where the stakeholders give you what is needed and that is fed back to the system of academic and R&D institutions. It is translated accordingly and moved back. So that is a gap in the research-policy nexus, which is currently existing, where governments and associated institutions like CSIR are included. They are trying to incentivize and promote this demand for innovation. This is an area where organizations like UNESCO or other policy organizations could be involved, making a very good documentation about was is needed. One of my colleagues told there are many people and many institutions sometimes addressing the same problem, and of course that is a cause of concern. But I will also say that the good part is that one is getting validated by its peers about what is the effectiveness of that sort of endeavor. That is again a gap which needs to be bridged to a policy nexus. The SDGs just started in 2015 and we are still learning. In IMPRINT we say there are million problems for billion minds. India has a billion population, so there are a billion minds to solve a million issues, so basically the point is to generate those ideas and more and more people will come on board. If every sector comes on board it will be easier to tackle those problems.

Answer and comments by CA.

The discussion about how to communicate research and how scientist are talking to policymakers is relevant. It is related to the value of interdisciplinary research. There was a time when we talk a lot about interdisciplinary research, particularly medical research. In the research that we are doing, there is a room for collaborating with people like anthropologist, historians, communicators, people who do all these aspect of marketing who can develop a prototype, but the real work is how to take it in the market. I think, rather than doing articles which probably make more points in the “publish or perish” scenarios, it would be better to collaborate with more people instead, because then you will do more relevant, higher quality and more holistic research. Then the points will automatically be through more quality turnover of your research.

5. Questions and answers / discussion with audience (Part 2)

Participant working for a research institute. My question is for Susan. You said industry supports SDGs because it is important and then you gave examples, but you do not mention why other companies do not support the SDGs; could you please explain why?

Deepanwita Chattopadhyay, IKP Knowledge Park India. There are two problems in which the industry should focus: technology obsolescence and people needs. You need to have your innovation team in site to look at problems that need innovation implemented immediately because you have to bring up a product every 6 months based on those problems. But if you are doing in a traditional style as often happens it will take four to five years to innovate and engage the adequate institutions. If you want innovation in the short term you have to have an industrial innovation team and to engage science.

Question from a participant. Thank you for this very interesting panel. Christopher mentioned very interesting things about Tanzania’s economy and focus on growth and industrialization, not poverty. But how economic growth really impacts the people, and the whole industry union, and industrialization? Is this really a good idea to just focus on growth because this idea of trickledown

economics? Somehow this growth will impact the whole industry in highly industrialized sites. I'm really interested because this is a very diverse panel with speakers from France, India and Tanzania, looking at sophisticated relevant examples. You can see the potential in France, the UK or the US, where you have had a huge incoming demand for quality during the last 30 years. So, is this growth really good enough or not?

Barbara Becker from ETH Zurich and I am an adviser for this conference. I'm just involved in reviewing one of the projects of the Horizon 2020 program on societal impact and one observation is that nonscientific communication and dissemination of results is a challenge, we discussed that already, but another challenge is drawing ownership, the transdisciplinary aspect of this project, it's very difficult to really implement and to create joint ownership from policymakers and not only academic stakeholders, and the scientist. I would like to address this question to all, but maybe also to Melanie in particular; and also, how do you measure or monitor the success of your program for example in the applications to science foundations for money flowing into your creative ideas, and also my question about ownership.

Patricia Heuberger-Meyer from ETH Zurich. My question is for Melanie. I was wondering how you approach the participants, mainly scientists, how do you bring them to your program.

Yvonne Walz from United Nation University. My question is to Melanie. What are the criteria for the establishment of your innovation center? Why was it decided to have the two centers, or were the centers already there? How the 6 months follow up program after this day of brainstorming works? How are the teams established for conducting that kind of project implementation? Also, from a researcher perspective you will need to find funding, how is it in practice?

Monique Bolli from EPFL. I worked previously at the SDC in Switzerland. I'm doing my PhD in innovative communities in China, I'm following a project through Ethiopia rights. My question is to Christopher. I'm a training social anthropologist so I'm really happy you mentioned anthropologists. It is rare in this conference. I would like to ask you more details about what kind of social research needs to be integrated in your project because it's very vague and vast. I also would like to know how to contribute because myself I am very often in this nexus and I am wondering how to position myself?

Christine Ritch from the Technical University of Denmark. I've been thinking about the fact that in this conference t I have only met few participants from the industry. If you have had this conference in Denmark I'm sure industry would had been more represented. We are quite proactive, and we have the Ministry of Foreign Affairs who is launching a financial model which promotes major industry participation with NGOs and with the civil society sector, and we as university said "Hey, remember us!" because we know that when we collaborate with the industry, it is for the benefit of the university and the industry. Even if we do see this new financing models, it is difficult to match the traditional purpose or impact driven inside of the NGOs sector with the business driven mentality. We are looking into new business models and it is difficult to go back, and we did not find the solution, but we have been talking a lot about these different kind of actors and models. Do you have any experiences during your studies and work?

Answer and comments by UB.

In my department area, we experience why industry and academia are not linked. As a teacher, I also see some verities on that matter, and also during my project leaded by G. Tejada regarding skilled migration. Why academia and industry are not linked? If this was not an initial aim in your research project, it is difficult to bring them together, unless some leading academician ignore many of the rules dictated during their project. If your project needs industry you have to do it and include it in your daily work. It's difficult again to keep the count of these things during the research as you have pressure to deliver on time and other sorts of problems. I often observe that when the funds are coming from a foreign country, they will come to the institution and they will see some very important gap. Sometimes it is very difficult for the academic person to implement some of the objectives due to bureaucratic burdens. Not less important is also the need of mutual understanding between industry person and academician on a specific problem and joint work, and if anything comes out at the end who will then claim the patent, the university or the industry? These sort of problems arise from these linkages. In India there is a guiding commissioner. The new government has introduced a new department and the function also changed to some extent. If you go to Google search, there is a map on how the SDGs are being implemented. Also there is this sustainable development department, where all departments are involved. The system is responsible for implementing or observing this, and as you know the data problem is very hard in developing countries because of quality, because of government and because of many other things. So, it's very difficult to handle due to major problems. All the department are just doing their daily work, and too many differences are involved, so implementation is very difficult. If there would be policies supporting monitoring organization there the implementation would be easier.

Answer and comments by CA.

Growth itself is not sufficient to lead it to massification of sustainable development goals and lead millions out of poverty. Even industrialization itself is insufficient. It has to be followed by the structure of transformation; transformative growth is what we are using to conceptualize the contribution of social research, to the national framework of research and innovation; the social lab. As I mentioned, industrialization and growth come with certain demographic changes, reduction of infrastructure, migration to urban areas, skilled population and social provisioning and there for you would be having an effect in terms of basic needs, and those are the research areas. You know they are multidisciplinary; there is a role for medicine and medical research, there is a role for education research, there is a role for anthropology, etc. Because you have some minorities, some people with a certain mindset who have been left out. The SDGs are here to ensure that no one is left behind. This is why psychologists, anthropologists should also come and try to study why there are universities in transformation while some sections of the population are transforming and others are not transforming. This is what we are trying to do, to contribute into the research program on industrialization in Tanzania.

Answer and comments by MM.

On the notion of growth there is a research by OECD, which call it “inclusive innovation” and it is interesting what they do and the examples they show. Regarding the question on how do we find the researchers and ask them to come to the program and why do they accept. There are different strategies. First for those that were already in the program, we ask them to talk about their experience to other researchers, and that is the best way to convince others. Because researchers really like to participate so they can say to their colleagues that it is worth it. And then we have to work with these actors a bit differently than with the others, as I said we have a call for proposal, and so anyone can apply, researchers, scientists of course but also the social actors, policymakers, industrials… What we see generally is that scientists are the ones less answering in terms of proportion, so we do a huge work in our team to contact directly the laboratories that could be interested by the theme the program is tackling, and we explain to them what we are doing and why it is interesting for their research, not for something else, and that works pretty well usually, but it takes a lot of time.

Then there was the question of how do we measure the success? So, first the quality of the collaboration. Because a lot of collaboration are not into what we want, I would say. We do not force anything, the idea is to stay really open. Sometimes there are collaborations between two researchers, or collaborations between two industrials, etc. At the end of the day, what we measure is collaboration between scientist and civil society that aims to answer a social or environmental issue. We measure really the quality and the nature of the collaboration that we manage to create. We also measure how long the collaboration lasts; we follow this with an impact questionnaire for much longer than 6 months to see if it is ongoing. And also we measure the funding that we manage to bring into the collaboration.

Concerning the question of how we manage to fund this kind of collaboration; funding is actually a huge part of the follow up we do during the 6 months. Basically they are three different things we do during the 6 months. Firstly, we have a translation role, because sometimes scientists and social change makers do not understand each other, so we are here to translate. Secondly, we do logistics, pushing forward when it is time to see each other again etc., and organizing meetings. Thirdly, trying to find funds, or at least pushing opportunities on the team so that they can apply to different things. That is really key because as I was saying for me it is the whole system that needs to change and this kind of collaboration is really hard to fund, because you never tick the right boxes. Another part of the work of SoScience that is out of the field is consulting for funding agencies. And here our aim is to help changing funding tools and funding criteria, so they can develop funding tools for this kind of collaboration. The idea is that at the end of 5 or 10 years, we will have change a bit the system so that this kind of actors can actually find the right funds.

Immediate question by participant: Can you give numbers; how many of the collaborations get funds?

Answer and comments by MM.

It is a very young program. We started in 2016 and we decided to follow very closely some 10 collaborations, and their success depends on many things and also on the level of the funds. One of the collaboration, for example, applied for a Horizon 2020 EU grant. We don’t know yet if it passes or not. That is a huge funding. But also we have one that actually ask for funding for a PhD thesis and other for a master student. So the level of funding are very different; for now we said that on the 10, we have about half of them that got funded.

Answer and comments by DB.

Regarding the question about financial models for this kind of collaboration which are being done actually in India. I must say currently significant part of this financing is public funded in India. But obviously the paradigms are being changed, more and more

funding is being shifted to a mechanism by which you develop a product or deliver a solution to a pre-defined problem and things like that, so that is the thing which is getting incentivized. For this financial model you need collaborative work in the public funded places, so that you have multiple stakeholders, multiples ministries and of course industries trying to bring on board those relevant actors who are missing.
Regarding the question on transdisciplinary ownership of projects, what we have seen in India is that previously, scientific projects were owned specifically by science and technology ministries, in a public funded set up. But now other stakeholders are also becoming funding partners and ownership is getting expanded including social sector ministries, funding projects with a scientific and technological orientation. Also, some projects are given to a scientific governmental institution to solve social problems. So the nature of ownership is changing.

Answer and comments by SS.
Following up on funding models, I have two examples which the audience may find interesting. One is the Russian Federation in 2006. The government introduced a system whereby universities were entitled to develop technologies using federal funds and to sell these technologies to companies. So, obviously, this should have motivated them to develop technologies for the market. The second model comes from Japan. In 2012, the government decided to invest heavily in four universities to support the development of start-ups and the universities are entitled to turn to other financial institutions and private equity to find complementary funds. The universities enjoy a lot of autonomy in managing this collaboration and, when the start-ups make a profit, part of the profit goes back to the treasury.

In answer to the question from Eva, I would say that the reason there is no going back to the days before sustainable technologies is because there is a market for these now. One of the most glaring illustrations of this is that, after the crises of 2008 and 2009 in the European Union, many industries suffered in the ensuing years but environmental industries actually did very well in Europe. You also have to remember that governments are operating in the world of international agreements. There is the Paris climate agreement, there is the Kyoto Protocol and the older Montreal Protocol which is striving to reduce the hole in the ozone layer. The Montreal Protocol is the only one of its kind where governments have to pay a fixed contribution every year. This sustained funding for implementation explains why the Montreal protocol has been so successful in getting countries to change their refrigeration systems. Why is the market for sustainable technologies developing? Because the public can see the advantages of green tech. For example in Japan, Mitsubishi is developing a jet airplane with a government subsidy that has been designed to reduce the noise of aircraft engines. I don't know if it has been launched yet but you can imagine that both governments and the general public are going to be interested in a silent aircraft that can fly over homes without disturbing residents. So there is a market for sustainable technologies, which are in a virtuous cycle: as sustainable technologies become more widespread, it brings the price down, creating new markets. This makes it very difficult to go backwards even if we wanted to. In India, they are closing coal plants because the market for coal is shrinking. You have to follow the times.

6. Conclusions from panelists

Debashis Bandyopadhyay
There should be proactive attempts to involve academia in multi-stakeholder partnerships in a bigger way. Innovations arising from such interactions should be instrumental in driving the implementation of the SDGs. One of the major public policy imperative in the SME sector is the adoption of clean and sustainable practices so as to improve their chances for the future. This would require pervasive capacity building initiatives through contact as well as MOOCs platforms on the SDGs and also specific twinning with R&D / academic institutions to provide technology facilitation and linkages.

Susan Schneegans
Policy-makers should view with concern the low importance attached by most firms in countries of all income levels to maintaining linkages with universities and government research institutions for the development of products and processes. This is all the more unsettling in that strengthening university–industry ties has been an important target of policy instruments for decades now in many countries. Additional research is needed to understand better the reasons why innovation-active firms and universities collaborate so little with one another. Moreover, it would appear that the presence of multinational corporations acts as a catalyst for collaboration with universities in countries of all income levels. It would be useful to undertake further research to confirm this trend and analyze the benefits and drawbacks for universities in developing countries, in particular, of collaborating with foreign multinationals to develop innovation, particularly since the presence of foreign multinationals in developing countries is likely to

grow over time. It is also important to monitor the implementation of policy instruments that have been designed to foster university-industry ties and to evaluate their effectiveness over time, in order to make adjustments as necessary.

Melanie Marcel

Collaboration between different actors from different fields is key to tackle our most pressing issues and reach the 2030 Agenda. However we need to redefine our open innovation models and the purpose with which research policy is designed. We have to move from an economic-centered valorization of research to a social impact-driven valorization model. For this it is crucial to invest in bridging scientists with the social and solidarity economy (social entrepreneurs, NGOs, associations, etc.).

Christopher Awinia

It is positive that the session was well attended and attracted interest from across disciplines and countries. The interactive form of the session was also positive and panel presentation were very complementary. Social scientists need to understand their strategic contribution in research and innovation for inclusive and sustainable industrialization. Their contribution lies in supporting processes aimed at structural transformation as a prior-condition for industrialization and human development. An important aspect for social science researchers and policy-makers is to pay attention to research and policies which support high youth employment, reduce levels of inequality, support sustainable urbanization, build skills among youth and support rising wages. These form the basis for a research agenda for structural transformation for inclusive and sustainable industrialization, human development and the SDGs. In-order to achieve impact, social scientists should develop social innovation hubs with frameworks for monitoring and evaluating research and innovation for SDGs. The frameworks should include agreed research priorities and enhanced through adoption of Knowledge Management Systems (KMSs). KMSs is an innovation that social scientists can apply to conduct research in SDGs. Researchers, research organizations, innovation, science and knowledge parks, policy makers and industry can be pulled together through application of KMSs which can align research teams into specialty and sub-specialty areas and work across industry and countries to further research and innovate for inclusive and sustainable industrialization. Policy makers, international organizations and industry should make more use of KMSs to access new information on social research for human development as they simplify dissemination of research and innovation.

Uttam Bhattacharya

The 2030 Agenda is an important road map towards adapting and implementing appropriate scientific, technological and socioeconomic steps for a holistic, inclusive and environment friendly developmental strategy. It should place us to a better platform where the burning issues of reduction of poverty, particularly for the Global South and measures for ecologically balanced SDGs could be dealt with in a better way. An interdisciplinary approach towards achieving the SDGs is essential. There is still a severe dissatisfaction regarding the way the SDGs are being followed in different countries including India. Higher attention is needed towards the policy of peoples' centric scientific and technological research which can strengthen the steps towards the SDGs. There is a need to explore more appropriate institutions and a fair social environment, so that the 2030 Agenda could be fulfilled in better way within the set period. A continuous monitoring of different policies and periodical evaluation of the impacts of those policies are important. Lack of sufficient funds, proper coordination, integration and commitment among the different implementing agencies, and of effective participation from different stakeholders have resulted in an unimpressive outcome towards achieving the SDGs. For example, the Sundarbans, a UNESCO heritage site, a unique area in the South districts of the State of West Bengal in India, home to the Royal Bengal Tigers, one of the endangered species of the planet, one of the largest single block of tidal, halophytic mangrove forests in India, needs especial attention for proper implementation of the SDGs. The specific reasons behind the failures and success of various SDGs policies in different countries would need to be explored further. This session has enriched me in multiple ways. I believe other participants have also benefitted from the discussions. The interactive way was excellent for engaging a debate on how to better implement common goals for preserving planet and people, and for exchanging ideas for future activities and commitment to change with new zeal.

Thank you everyone!

Attached: Participants list

Gabriela Tejada and Claire Bernier – CODEV-EPFL / 28 September 2018

2018 TECH4DEV CONFERENCE

Session SE 09 CCT : "Strengthening the research and policy nexus in the implementation of SDGs."

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