

Report

Expert Workshop on Science for Implementing the Sustainable Development Goals

Co-organised by University of Ghana and University of Sussex

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Summary Report

Expert Workshop on Science for Implementing the Sustainable Development Goals (SDGs)

Co-organised by University of Ghana and University of Sussex

Venue: African Regent Hotel, Accra. Ghana

Date: 25th June 2019

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Abbreviations

AFDB	African Development Bank
AIAEE	Agricultural and Extension Education
APRA	Agricultural Policy Research in Africa Programme of Future Agricultures Consortium
ARUA	African Research Universities Alliance
CDKN	Climate and Development Knowledge Network
DFID-ESRC	Department for International Development Economic and Social Research Council
EPA	Environmental Protection Agency
GEF	Global Environment Facility
GIS	Geographic Information Systems
GRIPE	Ghana Recycling Initiative by Private Enterprises
GSA	Ghana Science Association
IAST	Institute of Applied Science and Technology
IAU	International Association of Universities
ICT	Information Communication Technology
IDS	Institute of Development Studies
IESS	

Introduction

The achievement of the 2030 Sustainable Development Goals (SDGs) depends on the successful implementation of policy decisions by governments. Governments, however, cannot achieve this alone. These policies need to be informed by policy-relevant evidence co-designed and co-produced with the relevant stakeholders, taking into consideration local and political contexts and interests. Universities are uniquely placed to lead the cross-

Since a key objective of the workshop is to strengthen cooperation between the University of Ghana and University of Sussex, participants in all sessions discussed potential joint research projects, sources of funding for joint research, as well as student and faculty exchanges to intensify actions on science for SDG implementation.

Opening Session

The workshop started with an opening session facilitated by Prof. Chris Gordon. The session included a welcome address by Prof. Daniel Asiedu, the Provost of the College of Basic and Applied Sciences on behalf of Prof. Ebenezer O. Owusu, the Vice-Chancellor of the University of Ghana. The keynote address was delivered by Dr. Eugene Owusu, the Special Advisor to the President on SDGs. Prof George Nkansah, the Director of IAST, Dr. Fatima Denton, the Director of UNU-INRA, Mrs Leina Shi, Head of Global Engagement at the University of Sussex, Prof. Joseph Alcamo, Director of the Sussex Sustainability Research Programme (SSRP), and Dr Ted Annang, representing the Director of IESS, delivered their addresses for the opening of the workshop.

6.2.2 #EADCTNôrô Remarks

By Prof. Daniel Asiedu, Provost, College of Basic and Applied Sciences on behalf of the Vice-Chancellor of the University of Ghana

Prof. Daniel Asiedu in his speech welcomed all participants to the workshop. He acknowledged that the workshop has been organised by the University of Ghana and the University of Sussex, on Science for Implementing the SDGs

disease, and potential for combining social and natural science in future research bids on global challenge topics.

The University of Sussex Vice-Chancellor, Professor Adam Tickell visited the University of Ghana in April 2017. In March 2019, Sussex welcomed a University of Ghana delegation led by Vice-Chancellor, Prof Ebenezer Oduro Owusu. Since 2017, the University of Sussex has operated a strategic fund to cultivate or expand research and teaching collaborations, and to provide a platform for the two Universities to collaborate.

By Prof. Joseph Alcamo, Director of the Sussex Sustainability Research Programme

In his remarks, Prof. Joseph Alcamo, the Director of the Sussex Sustainability Research Programme (SSRP), emphasised that the SDGs provide a basic template for development over the coming years, and achieving these goals will require not only political will and major financing but also new knowledge which the academic community around the world needs to provide. Building partnerships to provide this knowledge, such as between the Universities of Ghana and Sussex, is essential to this task and that explains the importance of the

completion of the voluntary national review report which reveals that there is generally good progress towards the social sector and governance-related goals, including health, education, gender, justice and peace. In contrast, there is a mixed performance on the economic-related goals, including employment, infrastructure and manufacturing. Crucially, progress towards the environment and sanitation goals has been extremely bad.

One thing that is clear to achieve the SDGs is the effort of all segments of society and this includes academia. This workshop on 'Science for Implementing the SDGs' is yet another great effort and contribution to the SDGs enterprise. Science, technology and innovation are intricately-linked and they have become the new currency for development. They provide the basis for new and sustainable approaches and solutions to meet the challenges of sustainable development.

Dr. Owusu shared a few perspectives on how this workshop could contribute to the success of the SDGs.

- Incorporating SDGs into the curriculum of universities to provide students with the requisite knowledge and skill to understand and address the challenges of SDGs.

- Student-faculty interactions should aim at generating new solutions to contemporary challenges of the SDGs by leveraging science and innovation.

- Identifying and unleashing the innovative potential of students by promoting SDG related research topics.

- Facilitating cross-sectoral dialogue and action. Universities must play a significant role in public engagement and participation in addressing the SDGs.

- Building partnerships to share ideas and find solutions and Universities must have policies that are SDG compliant.

In conclusion, Dr. Owusu reiterated that the SDGs are the greatest inheritance that we can leave for the current and future generation. Failure can therefore not be an option. We have the knowledge and the capacity to deliver and with the right set of policies and partnerships in place, we should surely deliver. He recommended that the conversations started in this workshop will be taken to the lecture halls and will ultimately be the oxygen that fuels the work of the universities.

Presentations on Research Themes

Four presentations were delivered on the four themes for the workshop,

- Trade-offs and synergies among the SDGs
- Circular economy and green economy for achieving multiple SDGs
- Urban/peri-urban

Prof. Alcamo proposed that the University of Sussex work closely with the University of Ghana to immediately tackle the first of these questions. He proposed doing so by jointly developing a cross-impact matrix of SDG interactions (Figure 1). The matrix shown in Figure 1 depicts a pair-wise comparison of goals, with the darker the colour, the stronger the interaction between goals. The advantage of such matrices are that they transparently depict the relative importance of interactions among SDGs and can be fairly easily developed with different interest groups. They can be used to analyse interactions between either goals or targets.

Figure 1: Cross-impact matrix for identifying priority trade-offs and synergies.

SDGs are listed on the left and topsides. Boxes, where they intersect, are colour-coded; light colours indicate a low level of interaction and dark colours a high level. From Scharlemann et al.¹

The matrix shown in Figure 1 was developed earlier by the SSRP working with a group of experts as part of a study financed by the Rockefeller Foundation.¹ Prof. Alcamo proposed that the Universities of Sussex and Ghana work together to develop such a cross-impact matrix with the objective being to identify priority trade-offs and synergies among the SDGs for Ghana. He asked participants for their advice on whether such a joint project should be launched, a.944 407.11 Tm4kT13(o1 0 0)17(m)-4y3E71 31 0 1 72.

Circular economy and green economy for achieving multiple SDGs

By Dr. Daniel Nukpezah/ Prof. Daniel Twerefou

Dr Nukpezah gave an overview of circular and green economy and also deliberated some projects and issues in these sectors. He started by saying a circular economy is an economic system aimed at minimising waste and making the most of resources.

that is more pro-poor achieving a number of the SDGs. He described a five-year research programme funded by the UK Department of International Development (DFID) entitled, 'Agricultural Policy Research in Africa' (APRA). The APRA Programme builds on more than a decade of collaborative

Contribution of Universities and the Research Community to SDG Planning and Implementation

By Prof. Chris Gordon

Prof. Gordon presented an overview of what has been going on in the University of Ghana in connection with the SDGs based on research, strategy objectives of the University and other administrative work. He stated that universities need SDGs to create demand, to have good universities and generate new funding streams, collaborate with partners and it also improves the internationalisations of universities. Universities also contribute to SDGs not as much as they could but there are a few areas such the human resource need especially those with the SDG world view, research on understanding the SDGs, and universities are also a neutral place where people can discuss the SDGs without political connotation.

An analysis of the SDG-related research University of Ghana was carried out. Firstly, 400 SDG specific keywords which have been created by a group of universities in Australia were used (Figure 4). These keywords were used to search for PhD theses that have been done in a 10-year period from 2006-2016. The analysis showed that three main areas of water, food and health are areas where the University produces most of its SDG-related research. The area that was not well represented is energy and this is where more effort can be put into or left for other institutions with strengths in this area to handle.

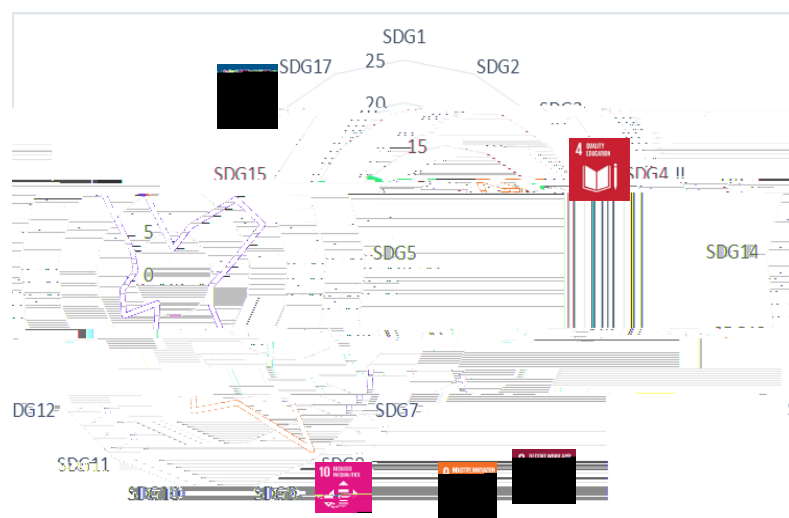


Figure 4: SDGs and the University of Ghana

Publications from three colleges (College of Basic and Applied Sciences, College of Health Sciences and College of Humanities) in the university was also analysed. SDGs 3, 5 and 11 were dominant i.e. having the largest number of publications (>50). The strategic plan of the university was another criteria used in the study. The University of Ghana has nine priorities each with key indicators. Research institutes were also analysed for the dominant SDGs that they are working on. Combining all these areas that were analysed the results showed that the University was focused on SDGs 4, 8 and 10.

Prof. Gordon recommended that for the University of Ghana to effectively help in the achievement of the SDGs, it will have to put more effort into the other goals of the SDGs because there are

interlinkages between the SDGs. Universities should research the SDGs itself, as already known the tier 3 of the indicators of the goals have not been defined yet and there need to be more research put into them to be able to define them. Linkages, synergies and trade-offs will need further research to be carried out on to enable a good understanding of the interactions of the SDGs. Technology and innovation, on the other hand, is also significant in achieving the goals. Universities must actively support the national and local implementation of the SDGs. There needs to be coordination between research institutions both nationally and internationally. Finally, research from universities must be transdisciplinary and there is a need to change the way we teach and learn.

Open Discussions

Questions and Answers

Question: What are some research topics in the area of circular economy in Ghana?

Answer: The integration of economies can be looked at from the perspectives of both Ghana and the UK which will then determine which key areas of the circular economy need to be focused on for research.

Question: In the APRA Project are there opportunities to work with the School of Agriculture and other units in the University of Ghana?

Answer: The School of Agriculture is welcomed to participate in the project and the other participants on the project at the University of Ghana can be contacted to get in touch with the School.

Questions: How can Ghana industrialise in an efficient way with the limitations that the country has?

Answer: Ghana can effectively industrialise since Ghana is yet to industrialise it can learn from the mistakes of other countries that have gone through the various phases of industrialisation. An example of effective industrialisation is eco-industrial parks. There are models which can be followed to deliver effective industrialisation. Ghana may not have to go through the traditional way of industrialisation. Technology and innovation can be one of the ways that Ghana can use industrialisation. Ghana, however, has a long way in achieving an effective green economy.

Question: What will be the research questions involved in the project proposed by Prof. Alcamo to identify priority SDG interactions in Ghana?

Answer: The methodologies for identifying priority trade-offs and synergies among SDGs are in an early stage of development. The cross-impact matrix method which Prof. Alcamo talked about is one method used for this task. This may seem like a simple method, but there are actually many methodological questions that need to be explored, e.g. what is the influence of scale and stakeholder-group on the results of the matrix? Therefore, major research questions of a project to develop such a matrix in Ghana would be: how do various factors influence results from a cross-impact matrix when it is used to identify priority SDG interactions? How can current methods to develop cross-impact matrices be improved so that assumptions are more transparent and the results more useful for policymaking?

Question: Explain further what transdisciplinary research is.

Answer: Transdisciplinary research has to start from the ground up. It starts with the people who need a question solved. It involves co-design and co-production with the stakeholder. The diagram illustrates the idea of co-design and co-production in transdisciplinary research.

*SDSN Australia/Pacific (2017): Getting started with the SDGs in universities: A guide for universities, higher education institutions, and the academic sector. Australia, New Zealand and Pacific Edition.

Group Discussions

In this session, participants were put in two groups to discuss themes for the workshop.

Circular economy and green economy for achieving multiple SDGs

1. What are the current designs and scenarios for a circular/green economy? (Ghana/UK)

There is currently a lack of policy or intentional practice in Ghana however, there is a gradual shift in the waste management sector. Zoomlion and Jekora are examples of enterprises providing some incentives for behavioural change.

Ghana's one district one factory policy is a short to medium-term opportunity to recreate a new business model, especially for a green economy.

E-waste, plastics recycling etc provide new thinking towards a circular economy and there seem to be a policy thinking emerging around the management of these materials.

Thinking towards sustainable consumption and production - public procurement, tourism, food systems within a ten-year UN initiative that promotes a circular economy through life-cycle assessment.

2. How would a circular/green economy support multiple SDGs?

Critical policy integration with intentionality at the policy-making level.

SDGs 2, 6, 4, 9, 13, 16, 17 (we could further explore other linkages).

Resource efficiency, environmental impact, and human well being.

We need to approach this from an interdisciplinary and multi-sectoral way.

3. What are priorities for ushering in such an economy in Ghana, the UK, and elsewhere?

Waste management is a key priority that can be looked at and the potential benefits of a circular economy in this sector. Employment, resource efficiency and environmental restoration and agriculture are some benefits that can be derived.

4. How can research support the development of a circular/green economy?

Cost-benefit analysis - but in a broader way that mutes the usual economic imperative.

Socio-cultural reorientation towards a circular economy (media-behavioural change)

Explore and establish possible or potential tradeoffs.

Community initiatives through citizen science to help communities derive their own data to establish priorities.

Place-based assessment of circular economy practices on a regional level (West Africa) to see who is doing what.

5. What are the outlines of a joint project on the circular economy and green economy for achieving multiple SDGs in Ghana and the UK at different scales of time, space and governance?

Do a best practice comparison or exploration research between universities.

Value justification/opportunity for a movement towards a circular economy.

Get communities exposed to the SDGs and create community-based monitoring and implementation mechanisms (community ownership at the micro-level). Universities are sites for social experiments and so lessons should be scaled up. Legon and Brighton can focus on engaging with communities and applying sustainability principles on our campus for cross-campus learning.

Trade-offs and synergies among the SDGs

1. What are examples of trade-offs and synergies among the SDGs, and how do they occur?

Trade-offs

Certain kinds of crop production and fishing aiming to achieve the zero hunger goal may inadvertently result in environmental degradation.

Industrial-scale crop production aiming at reducing poverty may instead enhance food insecurity.

The exploitation of mineral resources may result in food insecurity, environmental degradation and degradation of water quality.

Synergies

Education may enable the use of advanced technologies to improve food security.

Education may also help address environmental challenges.

Introduction of clean cookstoves could contribute to a lessening of wood extraction from wooded areas surrounding villages, and would definitely reduce the serious threat to the health of women and children from smoky cookstoves.

Following the principles of integrated water resource management would contribute to achieving water, food, and other goals.

2. Which actions maximize synergies among the SDGs?

- Collaboration and coordination among institutions.
- Education on the SDGs at all levels.
- Use of technologies e.g. ICT/improved modern sanitation methods.

3. How can we reduce institutional barriers that militate against coordinated action?

- Improved collaboration between MDAs and other relevant stakeholders (Governmental and Non-Governmental Organisations).

4. What are the outlines of a joint project for identifying the most important trade-offs and synergies in Ghana and the UK at different scales of time, space and governance?

- The Commonwealth provides different opportunities that we could possibly explore to our advantage as research institutions.
- We need to also look at smaller consortia to see what opportunities are there.

5. What are the outlines of a joint project for identifying the contribution of universities and the research community to SDG planning and implementation in Ghana and the UK?

Potential projects and activities:

- Explore readiness and map out good practices for universities, to get a set of barriers and enablers to create an SDG-ready university. There could be institutional research to characterize a sustainable university campus.
- A small aspect of the research community seems to be looking at SDG issues and there is a need for a more purposeful mobilisation of the research communities in the two universities.
- As an activity for UG, we could do a retrospective mapping of the UG research themes to the SDGs targets and indicators.
- Institutional best practice learning especially at the administrative levels (training and building capacities for the right personnel to play roles in SDG implementation and planning.

Plenary Session

This session was moderated by Prof. Alcamo. Participants were put into two groups to deliberate on the themes given.

Open Discussions

Prof. Twerefou opened up the discussions by suggesting that both economic and social aspects of the circular or green economy should be addressed. He continued to say that local research on the green economy should be explored and further research conducted to build on it. More effort should be put into regional-level research

interactions among SDG targets in the cross-impact matrix, it was suggested that new techniques used at ISSER for crunching big data sets might be very helpful. Dr. Crentsil could contribute here.

What will be the research goals for this theme (urban/peri-urban areas: food systems and sustainability) be? To answer that, the group agreed that most of the research ideas from this theme will emerge from consultations with communities and stakeholders. There will be topics that will be focused on, but the actual research questions will be in consultation with stakeholders. What then will be the motivation for going to the stakeholders in the communities? The motivation is to find out innovative ideas and where these innovations are taking place in these environments and to see where there more sustainable practices taking place. Looking at urban farming in Ghana it is mostly linked to land tenure systems, it will be good to look at that element as a research question or topic.

Closing Remarks

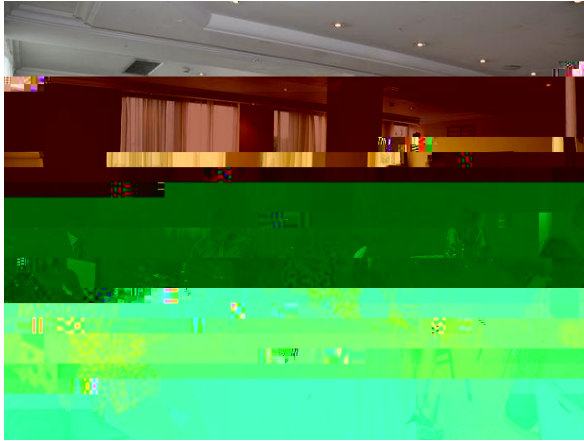
By Prof J. Alcamo

Prof Alcamo expressed his strong opinion that it has been a very interesting and important meeting and heartily thanked participants for taking the time out to be at this workshop. He also expressed his thanks for the excellent organisation of the meeting. He was very impressed by the excellent presentations and was especially honoured to have had the chance to discuss many important issues regarding the SDGs with colleagues from various departments and institutions of the University of Ghana. He said that some good concrete steps were taken towards cooperative projects and promised to work with colleagues in Sussex and Ghana on immediate follow-up so that we can begin working together on science for the SDGs.

Acronyms	Names
UG	University of Ghana
UoS	University of Sussex
MA	Millicent Amekugbe
JA	Joseph Alcamo
BM	Robert Manteaw
CG	Chris Gordon
MH	Mammie Hutchful
LS	Leina Shi
JT	John Thompson
AC	Aba Crentsil
ISSER	the Institute of Statistical, Social and Economics Research
ORID	Office of Research, Innovation and Development
SSRP	Sussex Sustainability Research Program

Annex

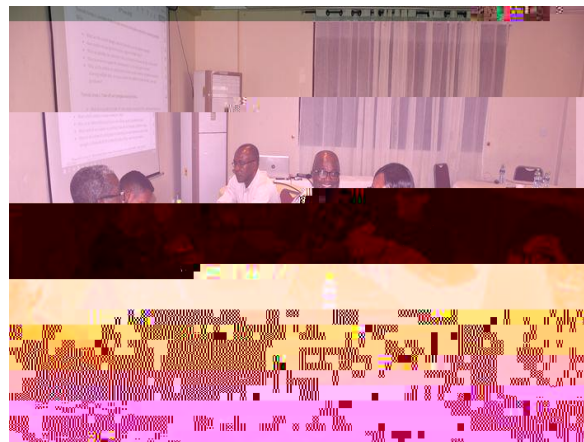
Time	Activity
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Cross-section of attentive participants



Question and answer session



Group discussions on trade-offs and synergies of SDGs



Group discussions on circular economy and green economy for achieving multiple SDGs



Plenary discussion session

Annexe 3: Biographies of Participants

Robert (Bob) Manteaw is a Research Fellow at the Center for Climate Change and Sustainability Studies. Dr. Manteaw's teaching, research and practice interests are in Environmental Learning, Climate Adaptation Planning, Sustainable Development Governance and Knowledge Brokerage processes for Socio-Ecological Systems Resilience. Dr. Bob Manteaw has worked in Public Policy (government), the private sector, NGO and academia and has a rich blend of interrelated experiences in environment and development processes. He previously worked as the Director of

and implement innovative projects and programmes to support the University's international income generation and strategic development. Leina holds an MBA in Higher Education Management from the UCL Institute of Education. She has native language skills in both English and Mandarin Chinese.

John Thompson is the Deputy Director of Sussex Sustainability Research Programme, Director of the Future Agricultures Consortium (FAC) and a Senior Research Fellow at the Institute of Development Studies (IDS), UK. He has worked on power, policy and sustainability issues in food and agriculture, water resource management and rural development for nearly 30 years, in both

Annexe 4: Questions for thematic Areas

Thematic Group 1.

Concepts of the circular economy and green economy for achieving multiple SDGs.

- What are the current designs and scenarios for a circular/green economy?
- How would a circular/green economy support multiple SDGs?
- What are priorities for ushering in such an economy in Ghana, the UK, and elsewhere?
-

- Can the Commonwealth provide a platform for encouraging this research, supporting co-design of research by academics and stakeholders, and disseminating research results on the SDGs?
- What are the outlines of a joint project for identifying the contribution of universities and the research community to SDG planning and implementation in Ghana and the UK?

Annexe 6: Useful Resources

[Links to other useful resources on the topics discussed will be inserted here]

- Future Earth SDG Labs - <https://seedbeds.futureearth.org/sdg-labs/>
- GHANA: Voluntary National Review Report on the Implementation of the 2030 Agenda for Sustainable Development- June 2019 - <https://ghana.un.org/en/19155-ghana-voluntary-national-review-report-implementation-2030-agenda-sustainable-development>
- International Science Council, Guide to SDG Interactions - <https://council.science/publications/a-guide-to-sdg-interactions-from-science-to-implementation>
- SDG Centre for Africa - <https://sdgcafrica.org/>
- Sustainable Development Goals (SDGs) in Ghana: Why they matter & How we can help – <https://www.undp.org/content/dam/unct/ghana/docs/SDGs/UNCT-GH-SDGs-in-Ghana-Avocacy-Messages-2017.pdf>
- Sustainable Development Goals Helpdesk - <https://sdghelpdesk.unescap.org/>
- Sustainable Development Goals Knowledge Hub - <http://sdg.iisd.org/>
- Sustainable Development Goals Knowledge Platform - <https://sustainabledevelopment.un.org/>
- Sustainable Development Solutions Network - <https://www.unsdsn.org/>
- Sussex Sustainability Research Programme - <http://www.sussex.ac.uk/ssrp/>
- UKRI-Rockefeller Global Goals Mapping: The Environment-human Landscape - <https://nerc.ukri.org/research/partnerships/international/tase/mapping/>

Annexe 7: Speeches During Opening Session

Keynote Address

KEYNOTE ADDRESS BY DR. EUGENE OWUSU, SPECIAL ADVISOR T

Although the challenge of achieving the SDGs may be huge, there are important building blocks that have been put in place in the country to underpin prospects for achieving the Goals.

Permit me to share a few examples:

discovery. Student – faculty interactions should therefore be aimed at generating new solutions to contemporary challenges, by leveraging science and innovation.

Third: Closely linked to the second point is the need to identify and unleash the scientific and innovative potential of students and to help them develop and scale up such innovative ideas. Here, universities must encourage and promote SDGs as topics for research, as a way of identifying and nurturing talents.

For example Possible research topic:

1. What are the fundamental imperatives that need to prevail to support prospects for achieving the Goals
2. Much has been said about the role of the private sector: but what are some of the 'quick wins' that can be achieved from the partnership with the private sector? And how can we fully leverage the expertise and capabilities within the private and bring to bear on implementation?
3. Financing is a key challenge. What are the sources of innovative financing and how can these be tapped to support implementation?

Fourth, contribute to strengthening public engagement and popularisation of the Goals – the university must play a significant role in public engagement and participation in addressing the SDGs. This may be done by initiating and facilitating cross-sectoral dialogue and action; regular engagement with the institutions charged with planning and implementation of the SDGs and providing an evidence-based critique of implementation plans and policies.

Fifth, build a partnership to share ideas and find solutions – partnership is one of the key tools for achieving the SDGs. No single individual, organisation or institution has all the knowledge, resources and capabilities to realise the SDGs. Through partnerships, we share these ideas, knowledge and resources for the implementation of the Goals. This may be done through regular conferences on the SDGs with other institutions where best practices may be shared and common solutions explored.

And lastly, policies of universities must be SDGs compliant – We cannot do all that I have said above without the universities themselves ensuring that its governance, operations and daily activities are in compliance with the SDGs. In whatever we do therefore, including the policies and managerial decisions we take, the overarching question should be, how does this contribute to achieving the Goals.

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I am hopeful that the outcome of today's workshop will contribute to the body of knowledge on the role of Universities, science and the SDGs and inspire many more institutions of higher education to actively engage on the SDG and to support their successful implementation.

Let me conclude by saying something I have repeated on a number of platforms. The SDGs is the greatest inheritance that we can leave for the current and future generation. Failure cannot,

therefore, be an option. We do have the knowledge and the capacity to deliver; and with the right set of policies and partnerships in place, we should surely deliver. I wish you fruitful deliberations, and I fervently hope that the conversation today will not end here, but will be taken to the lecture halls, and will ultimately form the 'oxygen' that fuels the work of your university.

I thank you

Address by Dr. Nkansah, Director IAST University of Ghana

Good morning,

It

are to harmonise the various activities that are ongoing independently in the several units of the university.

The UN's agenda, *Transforming our World: The 2030 Agenda-DO*

Address by Dr. Fatima Denton, Director UNU-INRA