ENVIRONMENTAL EDUCATION IN ARAB COUNTRIES
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Integrating Complexity and Interdisciplinarity for an efficient Education for Sustainable Development

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Chair in Education for Eco-citizenship and Sustainable Development (CEEDD)
Diane Foundation / Saint-Joseph University

Bridging the academic world with the civil society

Eco-citizenship

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Sustainable Development
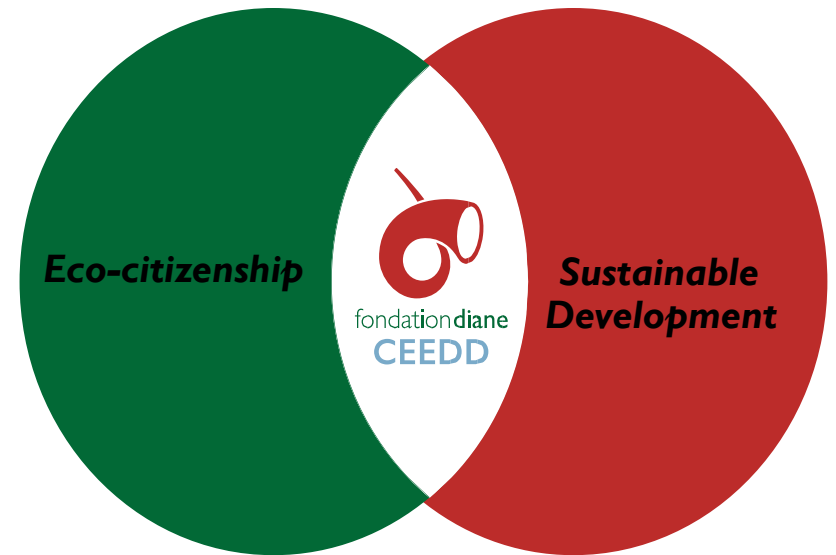
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Développement Durable

Founded by « Diane Foundation" in Septembre 2015 at Université Saint-Joseph de Beyrouth

Mission :

- Raise awerness
- Educate
- Research – Knowledge production

Committed to raise awareness, educate and produce knowledge around eco-citizenship and sustainable development, in order to enlighten citizens and co-responsible leaders, through 5 intervention schemes

EDUCATION / TRAINING
Continuous trainings
(Schools, Universities, NGOs and Municipalities)
Internships
E-learning

AWARENESS
Seminars and Conferences
Contests
Citizen Café

RESEARCH
Scientific colloquia
Scholarships: PhD and Masters degrees
Publications

PROJECTS
Environmental and civic
projects Impact assessments

COLLABORATION
National and international partnerships
Steering of national meetings
Coordination between stakeholders

Importance of Education for Sustainable Development

- Education for Sustainable Development (ESD) helps young people to learn more about **sustainability**.

- According to UNESCO, ESD empowers young people to change the way they think and work towards a **sustainable future**.

Higher Education in Agenda 2030

On January 1, 2016, the 17 Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development, adopted by world leaders in September 2015 at a historic United Nations summit, have officially entered into force.

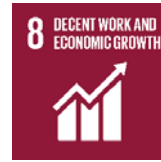Among them 9 Goals mention the functions of higher education specifically in the text!

2 ZERO HUNGER	1 x Research
7 AFFORDABLE AND CLEAN ENERGY	1 x Research
13 CLIMATE ACTION	1 x Education
3 GOOD HEALTH AND WELL-BEING	1 x Education / 1 x Research
8 DECENT WORK AND ECONOMIC GROWTH	1 x Education
14 LIFE BELOW WATER	1 x Research / 1 x Science
4 QUALITY EDUCATION	9 x Education / 1 x Higher Education / 1 x University
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE	4 x Research
17 PARTNERSHIPS FOR THE GOALS	2 x Science

Education for Sustainable Development is part of the Sustainable Development Goals

- Target 4.7 of SDG 4 on Quality education addresses ESD and related approaches such as Global Citizenship Education.

- *Target 4.7: By 2030, ensure that through education for sustainable development and sustainable lifestyles, all learners acquire the knowledge and skills needed to **promote sustainable development**, including:*

  - *human rights*
  - *gender equality*
  - *promotion of a culture of peace and non-violence*
  - *global citizenship*
 - *appreciation of cultural diversity and of culture's contribution to sustainable development.*

IAU Report (2020 in Progress)

Higher Education and the 2030 Agenda: Moving into the 'Decade of Action and Delivery for the SDGs '

IAU 2nd Global Survey Report on Higher Education and Research for Sustainable Development
Stefanie Mallow, Isabel Toman & Hilligje van't Land

IAU Global Cluster on HESD
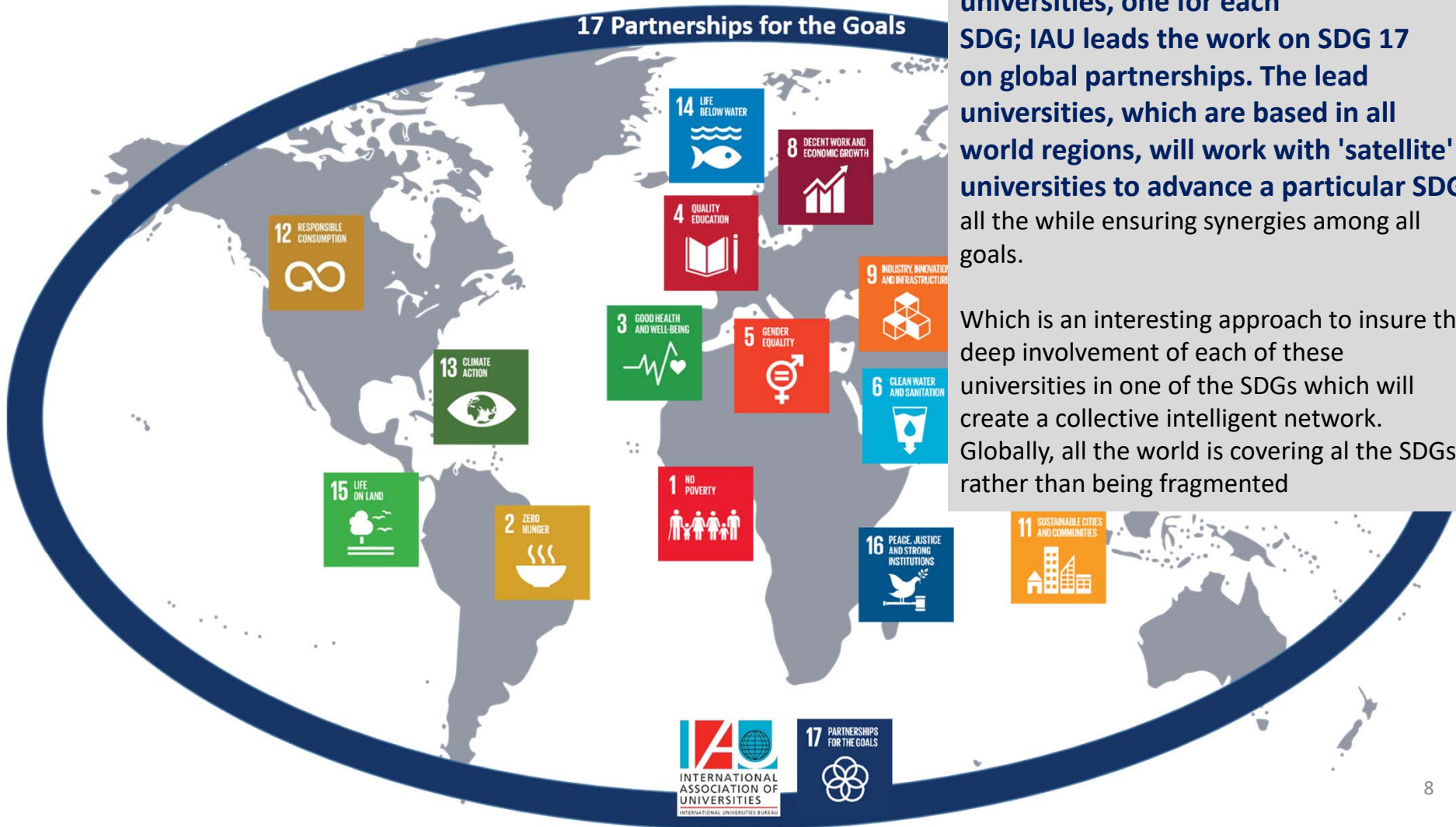
The IAU HESD Cluster consists of 16 lead universities, one for each SDG; IAU leads the work on SDG 17 on global partnerships. The lead universities, which are based in all world regions, will work with 'satellite' universities to advance a particular SDG, all the while ensuring synergies among all goals.

Which is an interesting approach to insure the deep involvement of each of these universities in one of the SDGs which will create a collective intelligent network. Globally, all the world is covering al the SDGs rather than being fragmented

International &Arab Universities for SDGs

- Results of 2ⁿᵈ Global Survey on HESD

Location of Respondents (n=544)

Africa	17.46%
Asia	14.71%
Europe	36.95%
Latin America and Caribbean	22.06%
Middle East	3.13%
North America	5.15%
Oceania	0.55%

The % of respondents is very different from a region to nother, for example:
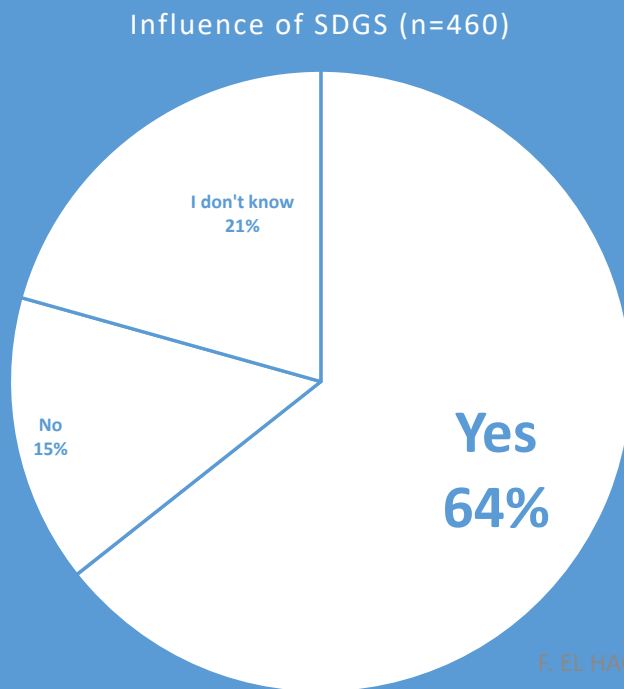
15 respondents from the Middle East (3.13% of the survey sample)

Highest rate of respondent from Europe (36.95%)

International &Arab Universities for SDGs

- Results of 2nd Global Survey on HESD

Influence of SDGS (n=460)

I don't know
21%

No
15%

Yes
64%

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Do you think that the adoption of the Sustainable Development Goals in 2015 increased the interest in sustainable development at your institution?

64% said "yes" !

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Higher Education contributes to all Goals

Most universities seem to be working on SDG 4, Quality education, which is an objective directly related to university mission

After SDG 4 most work is done on SDGs 7, 8, 9, 11, 12, 13

www.iau-hesd.net

University Actions for the SDGs on HESD Portal
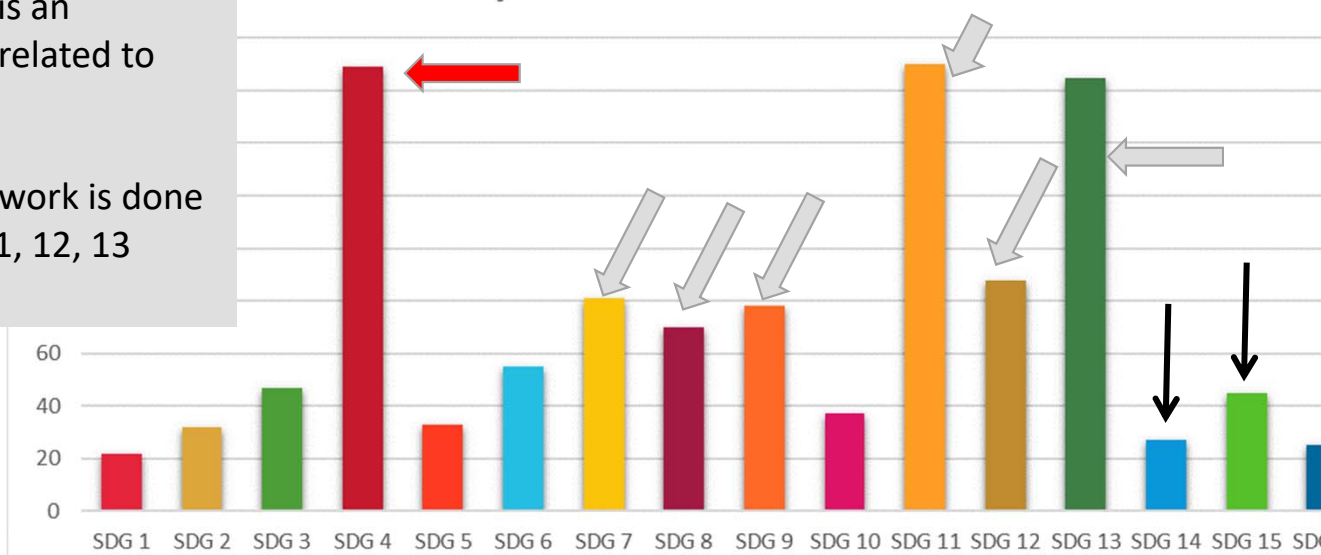
There is a shortage in the work done on the other SDGs for example concerning SDG 5, Gender Equality, there are few universities working on it.

A study shown in The Global Gender Gap Report 2018 proves that women are generally less paid than men for same education background. Managerial opportunities for women are particularly uneven across countries. There are six countries (Syria, Lebanon, Algeria, Egypt, Saudi Arabia, Yemen and Pakistan) where the gap is 90% or more between women and men to attain managerial positions.

SDG 13, Climate Action, although worked on seems to be inconsistent with the low investment in SDG 14 and 15, Life below water and life on land. Studies have proven the relation between them : deforestation and forest degradation results in loss of habitat for all species, a **decrease** in freshwater quality, an increase in soil erosion, **land** degradation and higher emissions of carbon into the atmosphere thus contributing to climate change which is tackled in SDG 13.
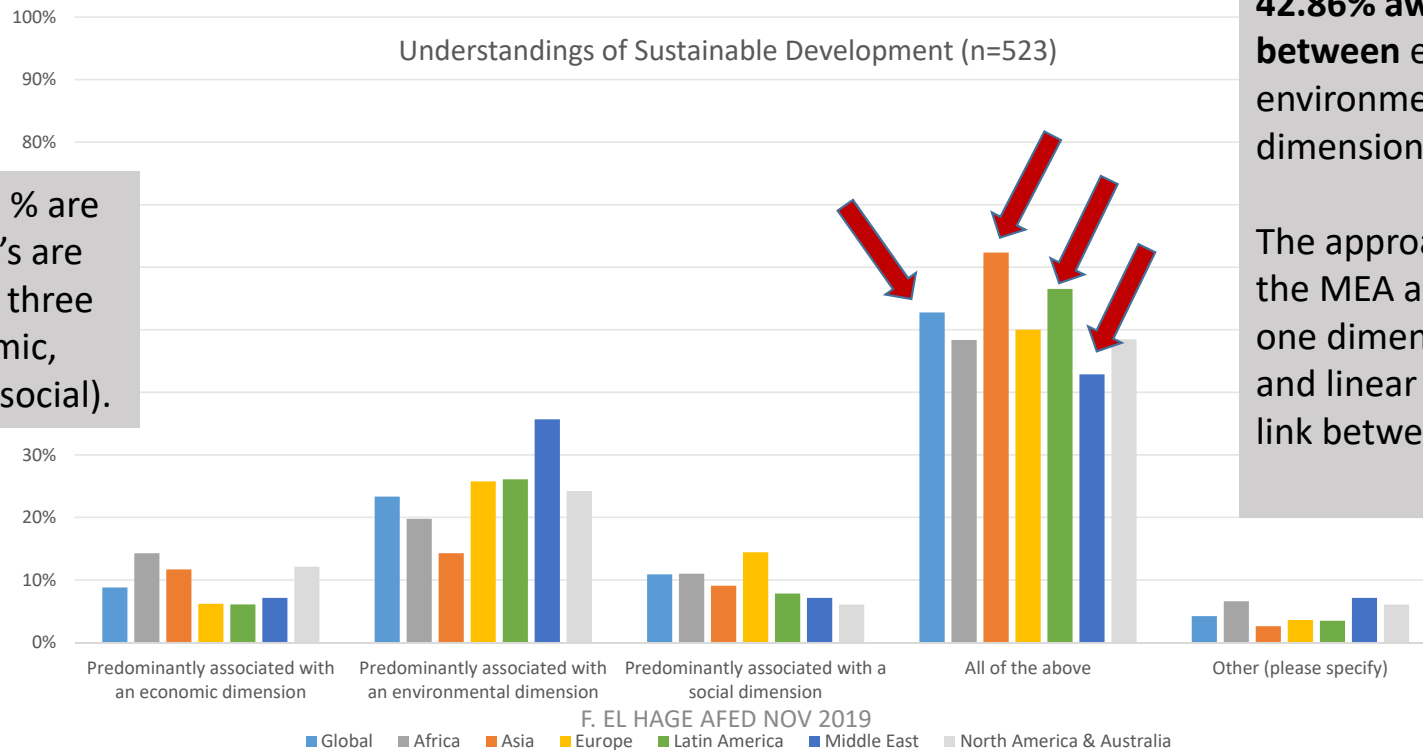
International &Arab Universities for SDGs

- Results of [2nd Global Survey on HESD](#)

By region Asia (62.34%) was the most aware of the link between the 3 dimensions, followed by Latin America (56.52%), (both above average).

The Middle East ranked with 42.86% aware of the link between economic, environmental and social dimensions.

The approaches, especially in the MEA are still focusing on one dimension : fragmented and linear approach with no link between disciplines

Globally, only 52.77 % are aware that the SDG's are associated with the three dimensions (economic, environmental and social).

Understandings of Sustainable Development (n=523)
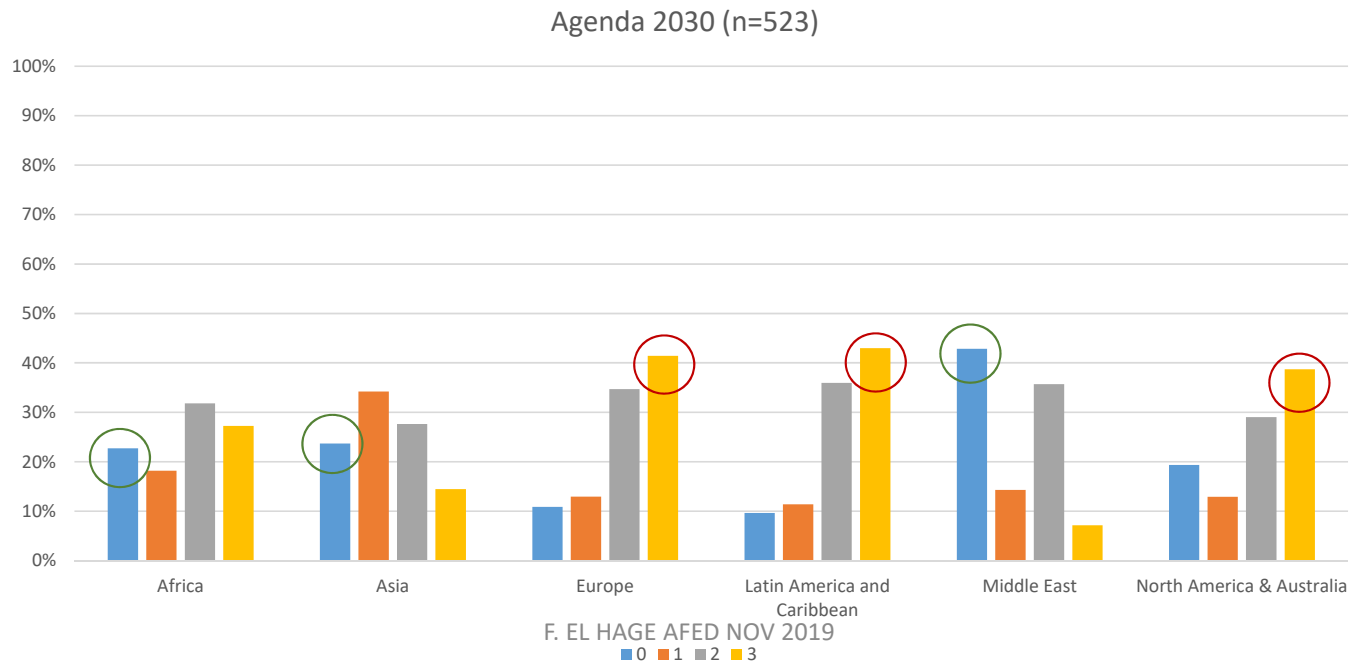
Legend: Global, Africa, Asia, Europe, Latin America, Middle East, North America & Australia

X-axis: Predominantly associated with an economic dimension | Predominantly associated with an environmental dimension | Predominantly associated with a social dimension | All of the above | Other (please specify)

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International &Arab Universities for SDGs

- Results of 2nd Global Survey on HESD

Understanding of Agenda 2030 (0=nothing; 3=very knowledgeable)

On average all regions scored less than average on their knowlege of Agenda 2030

With 42.98% Latin America being very knowledgable followed by Europe 41.45 %, and North America & Australia 38.71 %

Agenda 2030 (n=523)

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INTERNATIONAL ASSOCIATION OF UNIVERSITIES
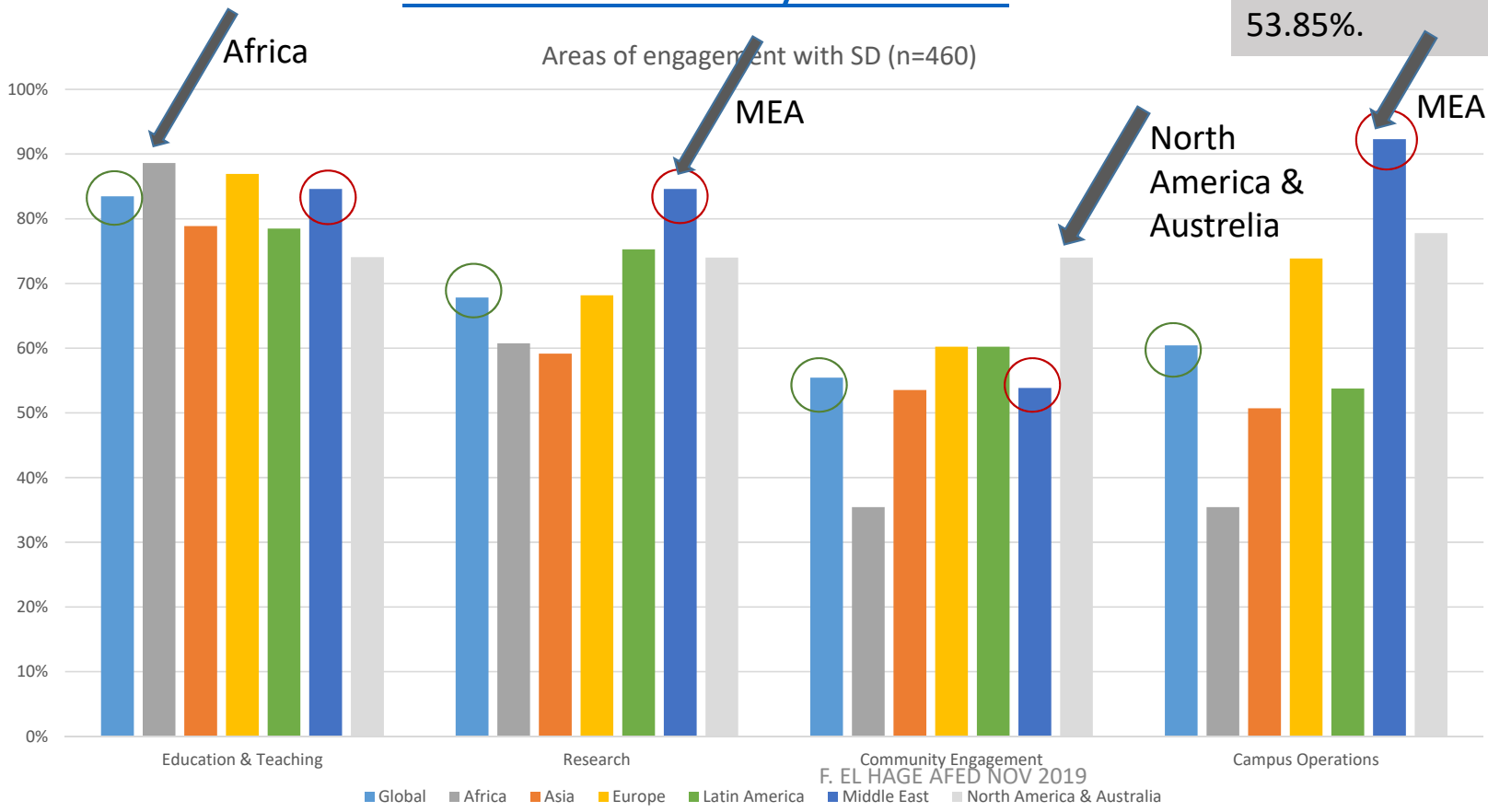INTERNATIONAL UNIVERSITIES BUREAU

International &Arab Universities for SDGs

- Results of [2nd Global Survey on HESD](#)

The Middle East was mostly engaged in Campus Operations 92.31 % surpassing the rest of the world followed by Research 84.62% surpassing the rest of the world, Education & Training 84.62 % coming in 3rd place , and lastly community engagement 53.85%.

Globally, on average, most engagement was done in the areas of Education & Training 83.48 % followed by Research 67.83 %, Campus Operations 60.43% and finally Community Engagement 55.43%, this proves that much work has to be done to engage Universities in community engagement programs.

Areas of engagement with SD (n=460)

Africa

MEA

North America & Austrelia

MEA

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

Education & Teaching   Research   Community Engagement   Campus Operations

Global   Africa   Asia   Europe   Latin America   Middle East   North America & Australia

International &Arab Universities for SDGs

- Results of 2nd Global Survey on HESD

Education & Teaching incorporating the SDGs (n=266)

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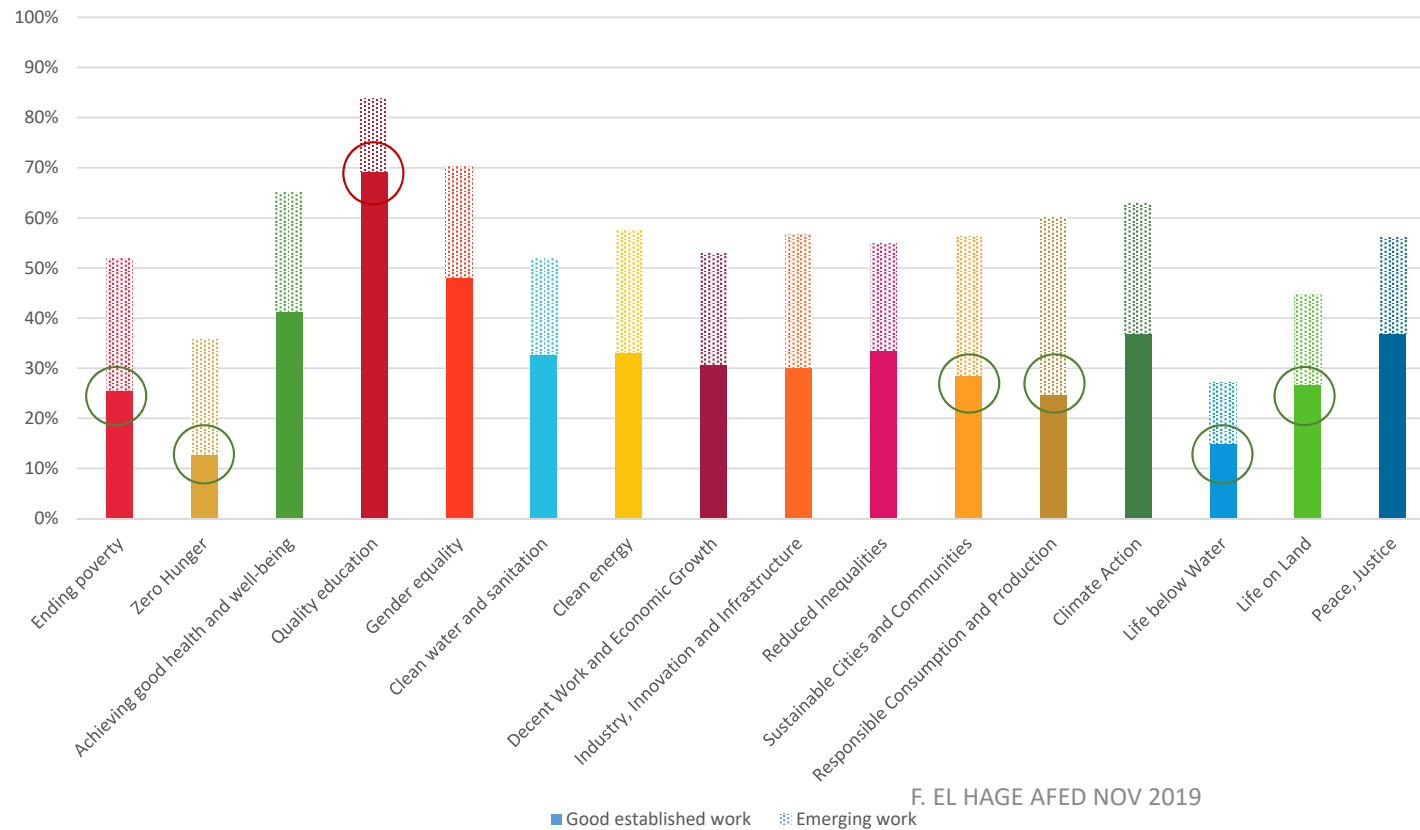
■ Good established work   ⁝ Emerging work

The only good established work beyond 50 % is SDG 4, Quality Education, all the others need to be worked on especially:
SDG 2 Zero Hunger (12.78 %)
SDG 14 Life Below Water (15.04 %)
SDG 12 Responsible Consumption and Production (24.81%)
SDG 1 Ending Poverty (26.32%)
SDG 15 Life on Land (26.69%)

International &Arab Universities for SDGs

- Results of 2nd Global Survey on HESD

Assessment Tools (n=301)
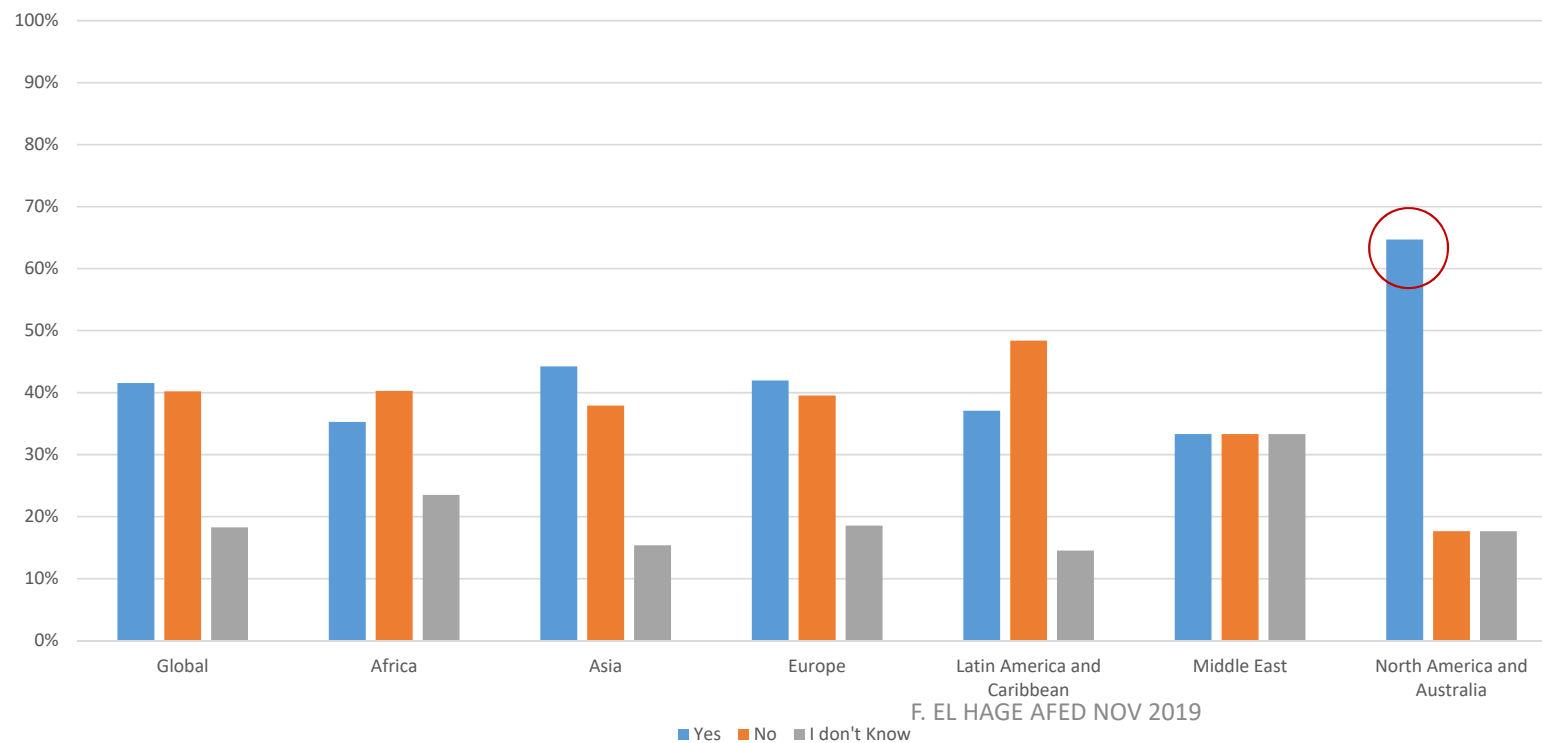
F. EL HAGE AFED NOV 2019

Less than 50 % of all regions are using assessment tools to study the implementation of the SDGs except for North America and Australia (64.71%)

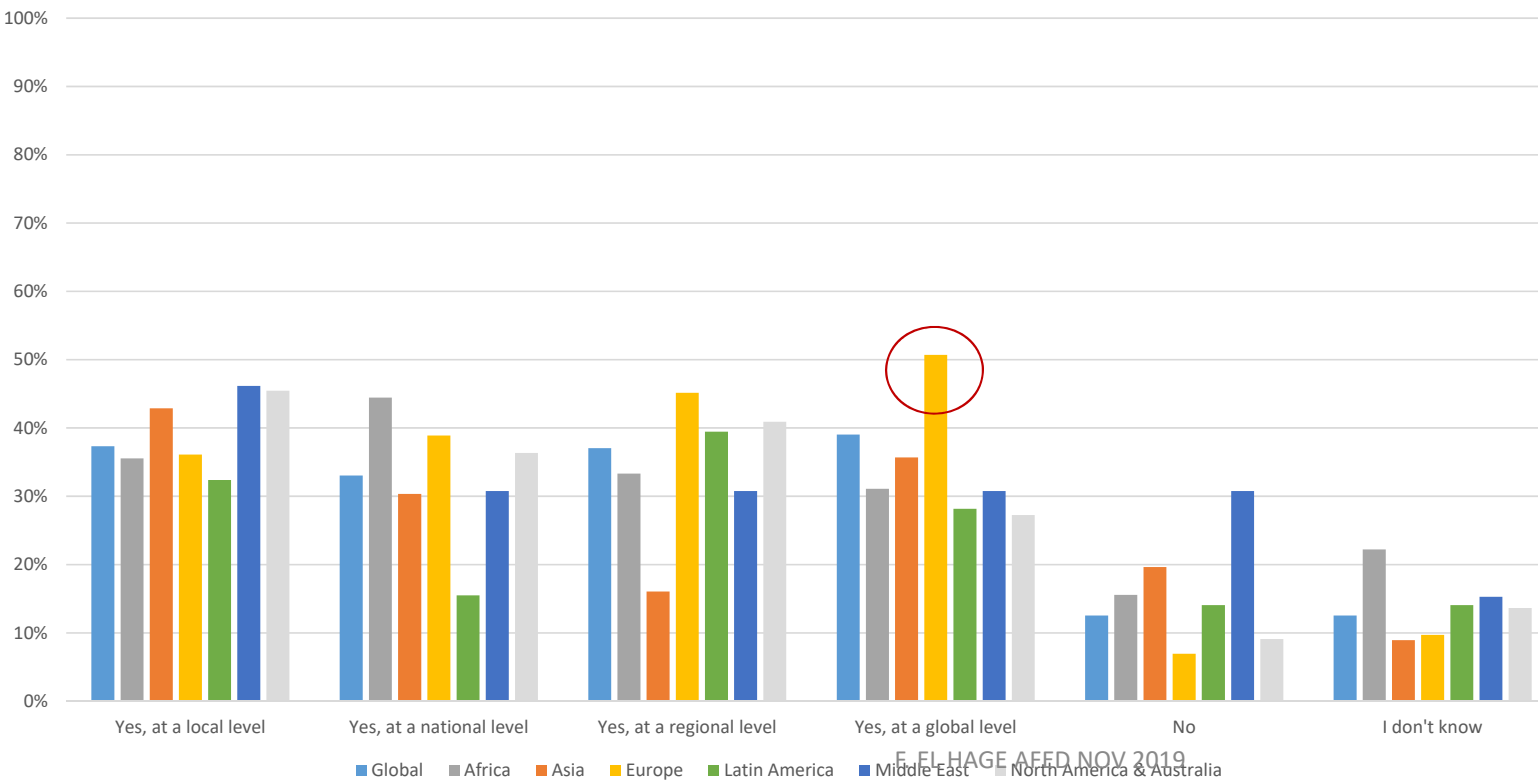Interesting field of research to build solid assessment tools!

International &Arab Universities for SDGs
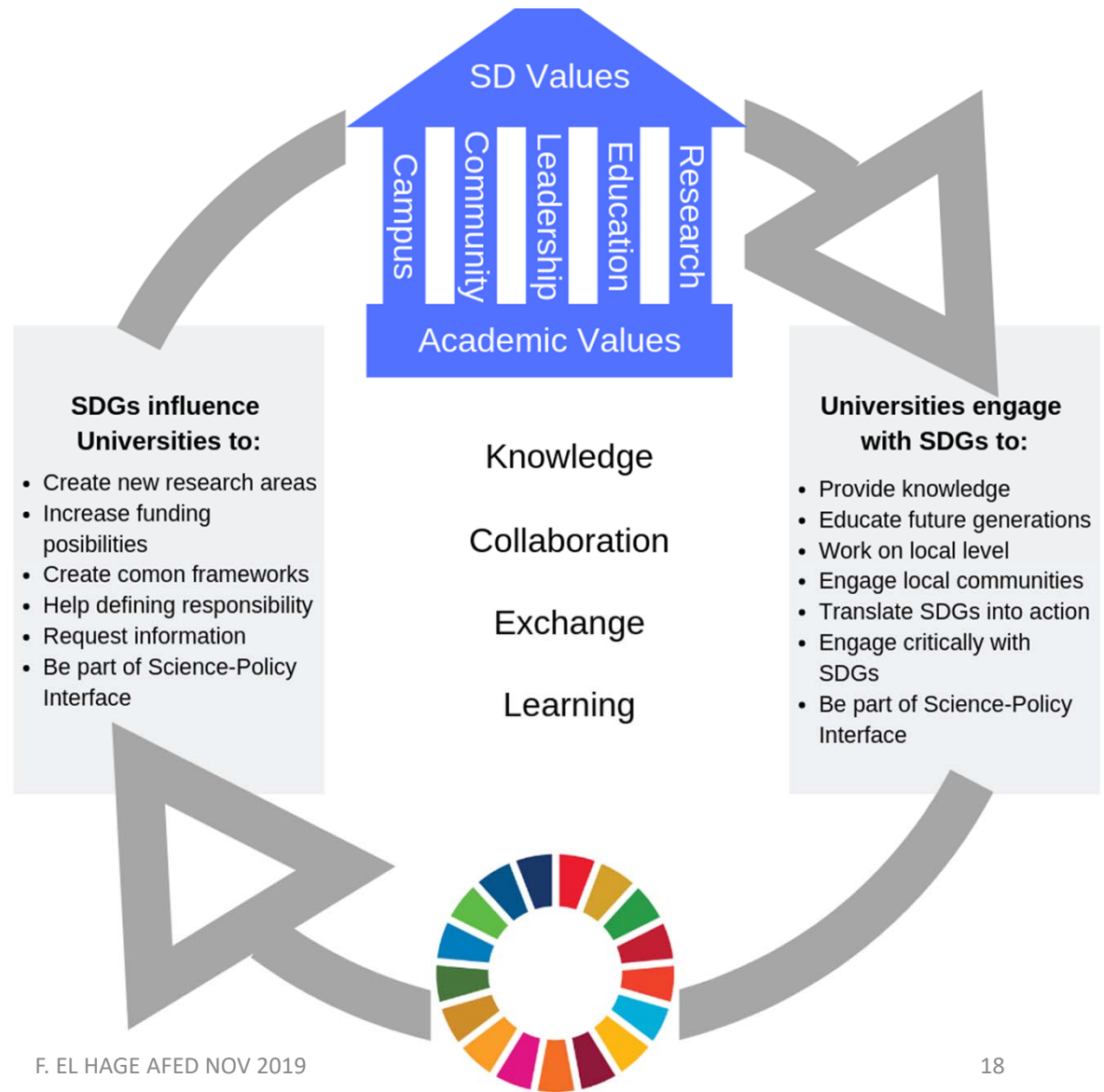
- Results of 2ⁿᵈ Global Survey on HESD

This histogram shows that more cooperation with Higher Education Institutions are needed at all levels: local, national, regional or global
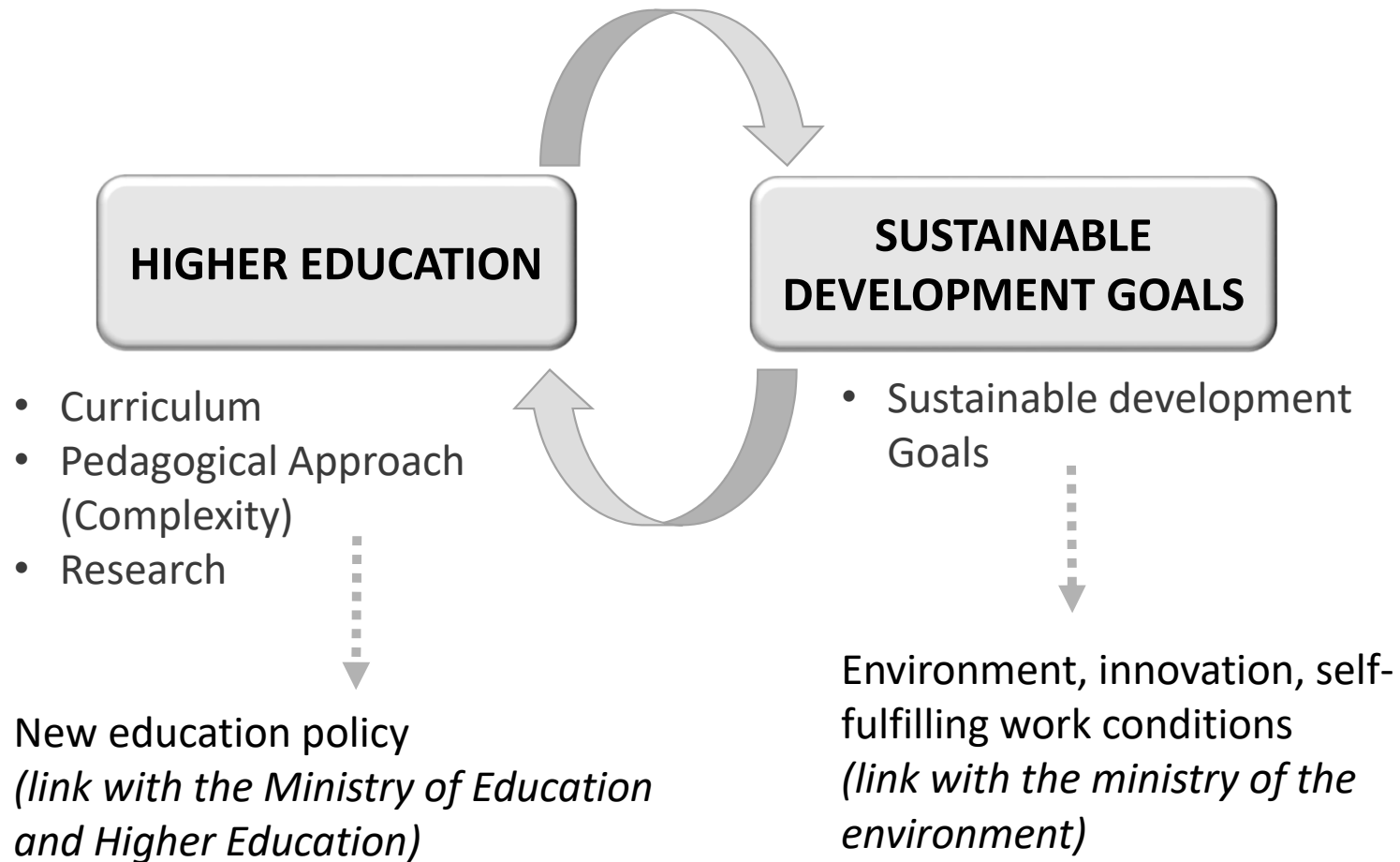All of the cooperations percentages were 50 % below average (Except Europe 50.69%)

Cooperation with other HEIs (n=351)

Win-Win Situation: HE & SDGs

Curriculum based on a innovative pedagogical approach

- PBL
- POGIL
- STEAM
- Interdisciplinary projects

SD Values

Campus · Community · Leadership · Education · Research

Academic Values

SDGs influence Universities to:

- Create new research areas
- Increase funding posibilities
- Create comon frameworks
- Help defining responsibility
- Request information
- Be part of Science-Policy Interface

Knowledge

Collaboration

Exchange

Learning

Universities engage with SDGs to:

- Provide knowledge
- Educate future generations
- Work on local level
- Engage local communities
- Translate SDGs into action
- Engage critically with SDGs
- Be part of Science-Policy Interface

HE and Sustainable Development

HIGHER EDUCATION

SUSTAINABLE DEVELOPMENT GOALS

- Curriculum
- Pedagogical Approach (Complexity)
- Research

- Sustainable development Goals

New education policy
(link with the Ministry of Education and Higher Education)

Environment, innovation, self-fulfilling work conditions
(link with the ministry of the environment)

Impacts of Higher Education on Sustainable Development Goals
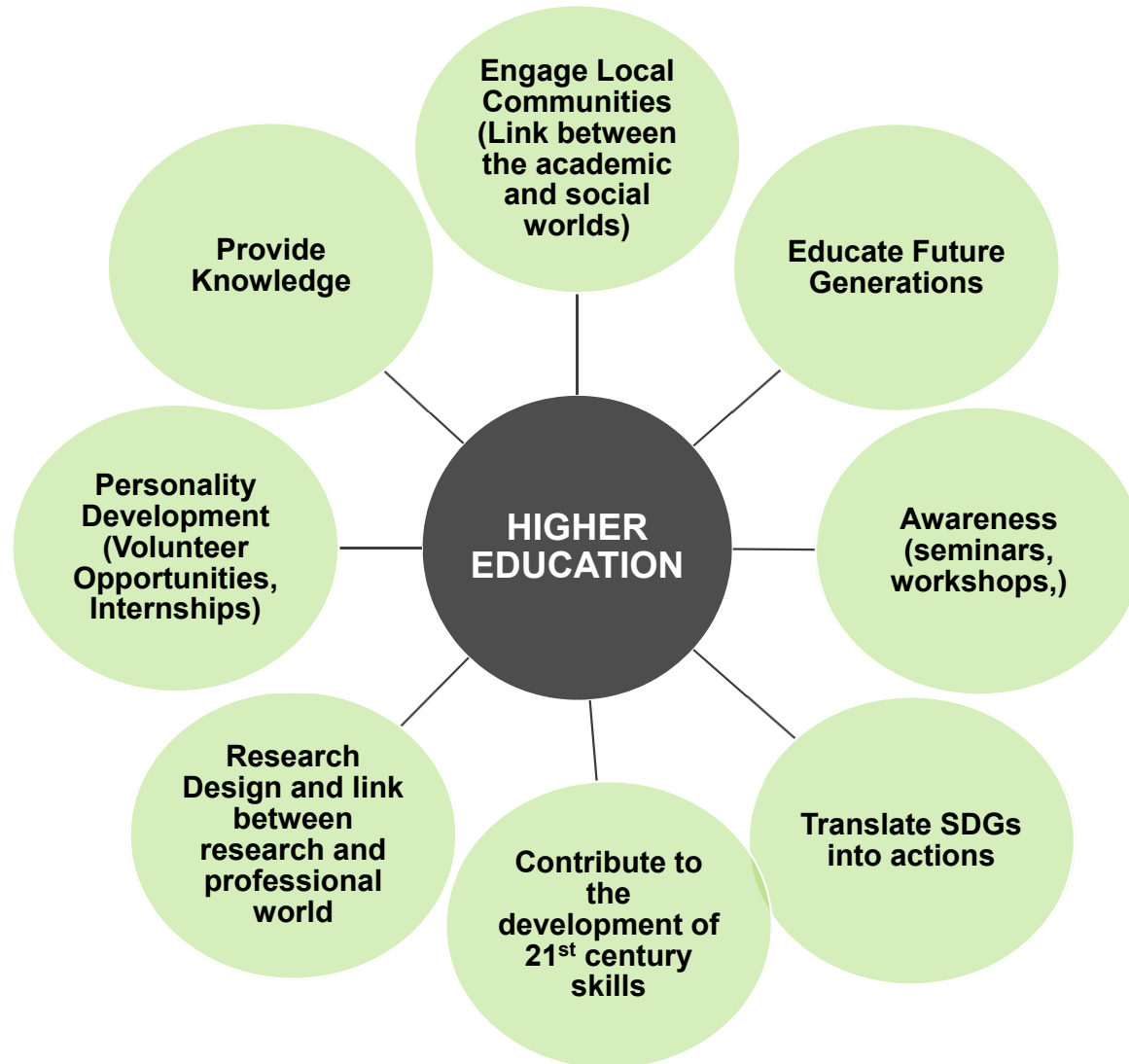
Talking about sustainability, Crucial ... not Enough

- Young people can get bored and lose interest. They have to be involved in an **active** process requiring requires **dynamic and participatory** learning methods.

- This can be achieved by equipping youth with **skills and knowledge** that help them develop
  - lifestyle
  - initiatives
  - mindset
  - role models for a sustainable future

- It is crucial that educators get learners **empowered and motivated** through to know and to do competencies such as:
  - Critical and integrative thinking and practice
  - Envisioning change and future scenarios
  - Achieving transformation and making decisions together

WE DON'T HAVE TIME

SWIM LATER

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21

How to educate to SD ?

- The methods of teaching cannot remain traditional, mono-disciplinary, isolated, and lecture-based

- Learning is now conceived as a process of evolution and personal transformation, and knowledge is therefore seen as an engine of growth and self-actualization

- A subject that learns is transformed – but this subject is not isolated from his environment; he has a double entry: a biophysical entry and a psycho-socio-cultural entry, the two entries flowing into and out of each other (Morin, 1999)

From this perspective, we may conclude that the subject is a complex being, and his education must take this complexity into account.

What is Complexity ?

- According to Edgar Morin (1999), complex thinking is a thought that :

➢Accepts contradiction

➢Connects, aspires to multidimensional knowledge

➢Is not opposed to simplification, but it refuses the disjunction of elements and attempts to bring them together to better understand the links between them

- Complexity is therefore not a refusal of simplicity, rather an openness to the inconceivable

What is Complexity ?

- Complexity therefore includes, by principle, the recognition of links between the different entities among which our thought necessarily makes distinctions but must not isolate from each other.

- This is the closest meaning to the term *"complexus"* (that which is woven together)

- complex thinking considers the object of study to be a system in itself, and it proceeds by shuttle between analysis/separation and synthesis/reliance edge

- It is constantly animated by a tension between aspiration to unfragmented, non-isolated, non-reductive knowledge, and the recognition of the incompleteness of all knowledge

The seven interrelated and complementary principles of Complexity (Morin, 1999)

|		
Organizational and system principle	**Principle of "hologram"**	**Principle of feedback**
Principle of recursive loop	**Principle of autonomy / dependence (self-eco-organization)**	**Principle of autonomy / dependence (self-eco-organization)**
	Principle of reintroduction of cognitive subject in the cognitive processes	

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The ecological approach of Bronfenbrenner's theory Ecological -Systematic approach

Bronfenbrenner's theory defines complex "layers" of environment, each having an effect on a human's development. ... The interaction between factors in the human's maturing biology, his immediate family/community environment, and the societal landscape fuels and steers his development.

Ecology of human and social development
D= f (PE) development is a function of the person and the environment
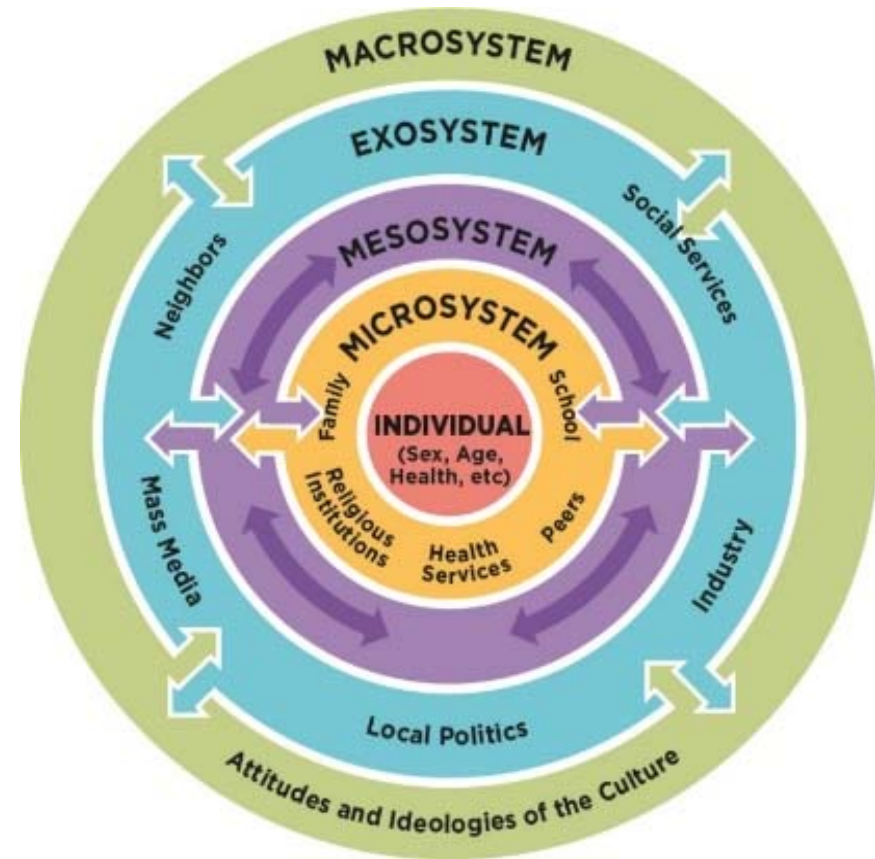
Teach the SDG's at university? Yes, but differently

- Stepping away from the paradigm of "teaching" to that of "Educating to"!

- Moving away from the principle of "isolation" and the "monodisciplinary" to the pedagogy of projects and interdisciplinarity.

Rethink methods of evaluation

- All these participatory pedagogical approaches remain unproductive if evaluation systems and methods do not follow suit

- Supplementing so-called summative or certification evaluations with "authentic" evaluations in which the steps and processes provide more information on the acquired skills than on final results

- Remote evaluations which allow for a new relationship to error and to the professor-student dynamic (Nahed and El Hage, 2018). http://rosette-svt.blogs.usj.edu.lb/

Educate to SD develop skills !

- In addition to digital skills, soft skills are also gaining traction. Schools and institutes of higher education need to focus on skills that machines lack: collaboration, creation, and direction (Outlook on the Global Agenda, 2015)

- A recent report by Federgon (2015) also states that, in the future, it is not knowledge that will make the difference, but the right attitude

- Critical thinking, creativity, problem-solving, and flexibility are skills that will only become more and more important. Non-technical skills are increasingly the engine of employability

AXIS 1: RESEARCH

Elaboration of a research framework around the procedures of development, implementation and evaluation of SD policies on the local level.

2. Conduct national studies that aim to:

- Identify the existing SD policies and activities through a national study
- Understand the development and implementation process of SD activities
- Map the actors and trainers in the field of SD and professionals' needs analysis in each country
- Describe the monitoring and evaluation processes related to SD activities

AXIS 2: Awareness of the Community

Mapping, listing the research actors and trainers in the field of SD and professionals' needs analysis.

Form a national committee per country

- Identify gaps between existing SD activities and SD education needs (all research and training programs will be built on the results of need assessment).
- Develop a network among different stakeholders in the field.
- Share tools and best practices.
- Establish an observatory on SD resources and actIvities.

AXIS 3: TRAINING

Organize north-south, south-south, west-east and east-west exchanges for students and academics – Capacity building

- Design a training program around capacity building in SD, based on the results of needs analysis.

- Develop a training program of SD based on a holistic approach: Teachers, supervisors, engineers, sociologists and architects, parents etc. (Project pedagogy and interdisciplinary approaches).

- Set up an assessment system to study the impact of the training program on conceptions and attitudes.

- Identify internship opportunities for students and academics.

AXIS 4: COMMUNICATION

- Conduct activities in response to identified society needs and linked to sustainable development goals.

- Organize training sessions for young teens, integrating their aspirations in the scope of sustainable development.

- Organize seminars, conferences and citizen-circles around the themes mentioned above.

- Contribute to scientific events through presence in:
  - Scientific committees
  - Organisational committees
  - Symposia, workshops ans seminars
  - Conferences as speakers or moderators

Conclusion

Education for SD is important :

- However, the pedagogical approach will have to change: hence, the importance of interdisciplinary projects integrating art (STEAM, POGIL, PBL, etc.) and of the holistic and systemic approach – which are nearly the natural declensions of the paradigm of complexity.

- These approaches remain unproductive if evaluation procedures do not follow suit. Hence the importance of integrating the so-called authentic evaluation directed at the evaluation of skills and remote evaluation (AEED, Nahed and el Hage 2018).

Conclusion
Improving the role of HE in SDGs

- Update Higher Education curricula to develop XXI century skills to meet the SDGs through :

  ➤ Designing curricula skills and learning outcomes oriented + authentic assessment

  ➤ Integrating a new pedagogical approach based on the pradigme of **complexity** and the Interdisciplinary project based learning

  ➤ Building the link between the results of the research in the **academic world**, the **professional world** and the **society** (Bridging the gap between the academic world and the community)

  ➤ Designing trainings based on innovative approach (systemic approach and interdiciplinarity)

- Redefine political education system in ministries of education and Higher education to integrate SDGs

- Build links between ministry of education and ministry of environment

Resource Tools – SDGs & HE

- 2019 - Sustainable Development Goals - Resources for educators, UNESCO

- 2018 - Universities must lead on Sustainable Development Goals, WUN

- 2018 - Leading role for universities in fight for sustainability, WUN

- 2018 - Approaches to SDG 17 Partnerships for the Sustainable Development Goals (SDGs), GUNi

- 2017 - Getting started with the SDGs in Universities, SDSN

- 2017 - *Mapping Awareness of the Global Goals – Report from the Sulitest, Tangible implementation of the HESI*,

- 2017 - *Next Generation Sustainability Strategy and Structure – Whole-institution Approaches to Sustainability in Universities and Colleges*, EAUC

- 2017 - *Educating for Sustainability, ISCN*

- 2016 *Sustainable Campus Index*, AASHE

HE Projects for the SDGs – Some Examples in Arab Region

- Creative Sustainable Development, Research area, Beirut Arab University

- Center for Sustainable Development, Qatar University

- Water, Energy and Environment Center (WEEC) at the University of Jordan

- Center of Excellence for Climate Change Research, King Abdulaziz University

- Chair in Education for Eco-citizenship and sustainable development (CEECDD), Saint Joseph University, Beirut

THANK YOU !

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- Rapport 2017 – Conseil d orientation pour l emploi- Automatisation, numérisation et emploi Tome 1 Les impacts sur le volume, la structure et la localisation de l'emploi Janvier 2017)

- Roux, C. (2016). Grandes transformations du XXIe siècle : «les sciences humaines et sociales sont incontournables   https://blogrecherche.wp.imt.fr/2016/11/02/transformations-xxi-sciences-humaines-et-sociales/

The Paradigm of Complexity – E. Morin

1. Retroactivity loop: breaking linear causality by making us conceive of the paradox of a causal system whose effect reverberates on the cause and modifies it = causality in a loop

2. Recursive loop: go beyond the notion of regularization towards that of self-production and self-organization. An active organization produces the elements and effects that are necessary for its own generation or existence

3. Dialogic principle: linking antagonistic themes, which seem to be at the opposite limit «uniduality, unitas multiplex»

4. Principle of eco-organization (autonomy - dependence): to keep oneself in one's being, to produce oneself and to organize oneself by spending and drawing energy, information and organization (interaction with the environment)

5. Systemic (organizational) principle: linking the knowledge of the parties to the knowledge of the whole. any organization reveals new qualities, which did not exist in the isolated parts, and which are organizational emergences

6. Hologrammic principle: the information of the part is in the whole and the information of the whole is in the parts