CHARTER FOR THE JOINT RESEARCH CENTRE FOR WATER AND ENVIRONMENTAL SCIENCE & TECHNOLOGY

1. NAME AND STATUS

The name of the centre is the Joint Research Centre for Water, Environmental Science & Technology, hereafter referred to as the JRC-WEST.

The Memorandum of Understanding signed for academic collaboration between South Africa-China, through the establishment of a Joint Research Centre on Water & Environmental Science between UJ and Nanjing Tech University, refers

The JRC-WEST is a virtual research centre, reporting to the respective Executive Deans of the participating Research Units and Researchers, i.e. Faculty of Science and the Faculty of Engineering and the Built Environment based at the University of Johannesburg (UJ), and the State Key Lab of Material-Oriented Chemical Engineering (MCE) of Nanjing Tech University, as founding members.

The JRC-WEST will implement a multi-tiered approach to facilitate collaboration between relevant research centres with an international footprint. Two reporting lines (one at UJ and one at NTU) within different participating institutions will be implemented, following the framework for the provisions of the respective government regulations applying in each of the participating institutions.

2. RESEARCH AGENDA

The research centre aims to implement research and development projects, in collaboration with existing UJ Research structures and Industry Partners through a multidisciplinary, project-based approach which will promote applied research related to:

2.1. Water quality and quantity management, purification, and desalination;
2.2. Energy management, efficiency, and renewable energy solutions;
2.3. Micro/Nano-grids and energy storage;
2.4. Waste to energy conversion;
2.5. Waste management, utilization, and optimization;
2.6. Air quality management and control; and
2.7. Other areas with mutual interest that promote sustainability in Industry 4.0.

The JRC-WEST will aim to build collaborative networks, not competing with existing research structures, but shall aim to collaborate on projects where applicable. The project-based approach towards responsible research and appropriate technology development, and the cross-cutting theme of sustainability underpins the multidisciplinary approach required to ensure a zero-net waste Industry 4.0. As a direct result of these activities, JRC-WEST will:

i. Undertake multi-disciplinary industry-relevant research;
ii. Publish research findings through multiple formats, but especially articles in accredited journals and academic books;

iii. Actively create Intellectual Property (IP) from research activities via the Technology Transfer Office (TTO)
iv. Support the mutual co-supervision of postgraduate (M & D) students and post-doctoral fellows who will be engaged in various research agendas as will be conceptualised by the centre;
v. Organise and support seminars, workshops, and conferences;
vi. Provide briefings and commentary for the media where necessary on sustainability and the green economy in the fourth industrial era;
vii. Engage with the civil society as deemed necessary on matters relating to sustainability and the green economy in the fourth industrial era;
viii. Offer policy advice to the relevant National, Provincial, and Local governmental agencies on related matters.
ix. Seeking and establishing collaborations to internationalise and localise research in this field;
x. Undertake community engagement projects with relevant industry partners;
xi. Recruit international and local researchers as associates;
xii. Contribute to the University of Johannesburg Global Excellence and Stature (GES) goals;
xiii. Ensure high ethical and professional standards in conducting its activities;
xiv. Participate in relevant academic, professional, research and civil society associations and committees; and
xv. Support the development and offering of training/short learning programmes in partnership with the UJ-Process Energy and Environmental Technology Station, to support capacity building in this sector.

3. STRATEGIC RESEARCH GOALS/OBJECTIVES

The JRC-WEST will facilitate the implementation of a triple helix innovation and collaboration model that promotes multidisciplinary research and development in the fields of water-, energy-, waste- and air quality management, with a specific focus to respond to the needs of Industry 4.0 within the green economy underpinned by responsible research and innovation. Through knowledge transfer, regional knowledge ecosystem offers opportunities for increased regional innovation and commercialisation, driven by an agenda toward zero-net waste in Industry 4.0.

The JRC-WEST function is to create a world-class collaboration platform, hosted respectively by the participating institutions, and those member institutions to be invited to form long-term strategic collaboration partnerships, to conduct cooperative research and to achieve high-level research outcomes, which are of both academic and commercial significance.

The JRC-WEST is established to serve the industry by addressing those grand challenges in the water and environmental science sector, to promote sustainable development of the green economy in the fourth industrial era and make a contribution to the economic and social prosperity, aligned to the sustainable development goals and the National Development Plan.

The JRC-WEST will support through a project-based approach, multidisciplinary collaboration between research centres and researchers both locally and internationally, implementing a triple helix collaboration model between government, academia, and industry to support sustainable development of Industry 4.0.

Envisaged objectives of the JRC-WEST include:

3.1. Joint funding applications to support and resource the objectives of the collaboration;
3.2. Supporting commercialisation and industrialisation activities to grow economic activity (which leads to investment, jobs, and competitiveness) in the green industry sector;

3.3. Supporting a shift in the economy towards cleaner industries and sectors in the fourth industrial revolution;
3.4. Open laboratories to each other, and share technology and science skill as far as practically possible and agreed in advance;
3.5. Promoting academic research and development by jointly fostering professional talents through people exchanges;
3.6. Transformation of science and technology achievements between countries;
3.7. Apply and implement academic programs, developing the discipline construction together, and leading to the promotion of global trends; and
3.8. Support local capacity development, and staff and student exchange.

4. STRUCTURE AND STAFF COMPOSITION

The founding members of the JRC-WEST include the Director and Researchers of the State Key Lab of Material-Oriented Chemical Engineering (MCE) of Nanjing Tech University, and the Vice Chancellor of the UJ, delegated to the Process, Energy and Environmental Technology Station, supported by researchers from the Departments of Chemical Engineering Technology, Chemical Sciences and the Postgraduate School of Engineering Management.

The JRC-WEST will establish a consortium that will include other international member institutions to build strategic research collaboration that can support sustainable technology development towards future commercialisation and industrialisation.

4.1. Management and Administration

The Member composition of the JRC-WEST will include:

4.1.1 Executive Deans and/or Directors of participating Institutes or their delegated authority; and
4.1.2 Co-directors for JRC-WEST that are based at various Institutes who should be a Senior Academic within the hosting Institution;
4.1.3 Research Centre Heads, Chairs and/or Directors collaborating with the JRC-WEST that are based at various Institutes;
4.1.4 The Manager of the Process, Energy and Environmental Technology Station at the University of Johannesburg;
4.1.5 The Director of the State Key Lab of Material-Oriented Chemical Engineering (MCE) of Nanjing Tech University;
4.1.6 Invited members which can include representatives from other Universities, Research Institutions, National, Provincial or Local Government, and Industry collaborators as appropriate under different research thrusts and streams.

4.2. Capacity development

i. The JRC-WEST would focus on SA-China skills development and research in the area of water, energy, air quality and waste management through collaboration, exchange and interchange of knowledge.
ii. The focus of the JRC-WEST would be on collaboration and funding industry based projects in the area of water, environmental science, and enabling green technologies in a sustainable manner, including research proposals for funding projects.
iii. Funds will be used to encourage and support the supervision of postgraduate students and post-doctoral fellows form various disciplines who will be engaged in research agendas as conceptualised by the JRC-WEST.
iv. Support the development and offering of training/short learning programmes in partnership with the UJ-Process Energy & Environmental Technology Station

(PEETS), to support capacity building in the water-, energy-, waste- and air quality management sector

v. Initiate and conduct short-stay programs for academics, researchers and scholars that wish to devote extended periods on experimental investigations relating to Industry 4.0 water-, energy-, waste- and air quality management.

vi. The JRC-WEST envisage that UJ as one of the leading universities in Industry 4.0 drive will attract scholars locally and globally to collaborate through inputs and sharing of specialised equipment, research ideas on innovative concepts, samples, proposals, funding prospects, and industrial collaborations.

4.3. Succession planning

A detailed annual succession plan is to be instituted by the co-directors and updated annually. Participation form senior academics from both Science and Engineering, supported by engineers at the UJ-PEETS will provide mentorship to junior researchers and academics wishing to enter an applied research environment.

5. EXTERNAL PARTNERSHIPS AND COLLABORATIONS

5.1. National partnerships/collaborations

The two main parties Nanjing Tech and UJ are open to global collaboration in the environmental arena, focussed on water, energy air quality and wate management. The current collaborator is UJ-PEETS. UJ-PEETS is funded through the Technology Innovation Agency via the Department of Science and Innovation and forms part of the National System of Innovation (NSI).

5.2. Regional and International partnerships/collaborations

Engagement, and staff and student exchange between the two Institutions have been supported by the UJ Confucius Institute over the last 5 years. In this time, collaboration with various researchers and Nanjing Tech were established from the State Key Lab of Material-Oriented Chemical Engineering (MCE), Science Research Department and Natural Science Department, National Special Separation Membrane Engineering Technology Research Centre

6. PRODUCTIVITY

6.1. Research outputs

The JRC-WEST would focus on all DHET and other international peer reviewed publications. Publications are a key focus for global collaboration. Publications include peer reviewed international conferences and Journal papers, as approved by DHET.

6.2. Innovations

The JRC-WEST will conduct research and development to support commercialisation and industrialisation of green technologies to grow economic activity (which leads to investment, jobs, and competitiveness) towards net-zero waste.

6.3. Community service

The JRC-WEST would include a significant community engagement component, as required by UJ, DHET and higher education. An emphasis on triple helix collaboration will be

encouraged through an applied research focus, engaging government, industry, and academia. Communities affected and impacted by industry waste, for instance, would be involved in the project-based approach through multi-stakeholder engagement and co-creation of solutions.

7. GOVERNANCE AND MANAGEMENT

7.1. Advisory Committee

The mechanism of joining the consortium, day-to-day running, and withdraw of members will be established by the members of the JRC-WEST through the terms of reference that will be instituted by the JRC-WEST Steering Committee within the framework of the provisions of the respective government regulations applying in each of the participating institutions. Industry Advisory boards coordinated through the UJ and Key State Laboratory will also be included in the governance structure by the JRC-WEST Steering Committee. The JRC-WEST Steering Committee will:

7.1.1. Serve as the governing and primary decision-making body of the JRC-WEST;
7.1.2. Provide overall strategic assistance and guidance to the Co-Directors: JRC-WEST in undertaking the activities and projects of the JRC-WEST;
7.1.3. Apply for funding using the various available opportunities.
7.1.4. Monitor and manage the overall budget and financial affairs of JRC-WEST, in terms of the prescribed financial policies, disciplines and administration of the University of Johannesburg and Nanjing Tech University;
7.1.5. Report to the management structure, via the directors, of the Executive Deans or delegated authority in the represented faculties and institutions;
7.1.5.1. The Co-Directors: JRC-WEST, as endorsed by the Steering Committee, will provide annual reports to the management structure of the Executive Deans or delegated authority in the represented faculties, and the Faculty Research Committee (a standing committee of the Faculty Board) on the activities and progress of the JRC-WEST.
7.1.5.2. The research centre recognises that formal engagements, such as standing committee meetings, must be representative; and that where and when possible, this research centre will facilitate broader engagements within the departments, school, faculties, and institutional community.

7.2. JRC-WEST scope of authority

7.2.1. The Chairperson of the JRC-WEST Steering Committee will convene and preside over the meetings of the Steering Committee and will rotate annually between represented institutions.
7.2.2. The Executive Deans have the authority for the appointment (and subsequent possible renewal of terms) of the Co-Directors of the local Centres. The initial appointments will be made in consultation with the Executive Deans or delegated authority and subsequent renewals will be made in consultation with the established Steering Committee.
7.2.3. The Co-Director of the JRC-WEST is responsible for the day-to-day financial management of the centre, research matters, such as projects, initiatives, conference participation, publications and collaboration with other or similar entities;
7.2.4. The Co-Director of the JRC-WEST will report to the Steering Committee of the JRC-WEST regarding the execution of their duties in terms of this charter;
7.2.5. The Co-Director of the JRC-WEST may establish other committees to provide advice or support at their discretion or as recommended by the Steering Committee;

7.3. Meetings

7.3.1. A joint meeting of co-directors will be initiated once the JRC-WEST is established in accordance with the guidelines and policies of both institutions, which will formulate strategic programs, define the cooperative tasks, and coordinate major matters involved in the daily operation of the planned JRC-WEST.
7.3.2. The joint meeting will be convened yearly once the JRC-WEST is established, but extraordinary or emergency meetings can be called by the co-directors.
7.3.3. A chartered Steering Committee will be established by the founding members of the JRC-WEST.
7.3.4. The JRC-WEST will initially be operated at two locations, based on the participation of the founding members, one in China and the other in South Africa.
7.3.5. The China Centre will be led by Nanjing Tech University. The South Africa centre will be led by University of Johannesburg.
7.3.6. One director and two deputy directors will be appointed for the China centre and the South Africa centres respectively, once the resources to do so are being secured.
7.3.7. The Co-directors may invite persons who are not members to attend meetings, on the condition that they may participate in discussions but may not vote.
7.3.8. Members of the JRC-WEST diligently execute their duty of care and fiduciary duty during deliberations and decision-making.
7.3.9. Decision-making is primarily based on the principle of consensus and/or sufficient consensus.
7.3.10. If consensus cannot be reached, a principle/motion is put to the vote and it is carried if a simple majority vote of those present at the meeting has been obtained.
7.3.11. The Co-directors have, on any matter, a deliberative vote and, in the event of an equality of votes, also a casting vote.
7.3.12. The minutes of each meeting are considered at the next meeting.

8. REPORTING

A director will be appointed to the JRC-WEST to report to the Executive Deans of the Faculty of Science and the Faculty of Engineering based on external funding attracted, following UJ governance and policies. An interim director will be appointed to Chair the JRC-WEST while this process is finalised.

An annual report will be submitted to the Executive Deans for noting, ratification, or consideration of matters.

9. FINANCIAL POSITION AND SUSTAINABILITY

9.1. The financial procedures will:
9.1.1. Function within the University's financial policies and procedures;
9.1.2. Apply the principles of corporate governance concerning financial management.
9.2. JRC-WEST represented by the Co-Directors and the Steering Committee will strive to attract external funding for its activities;
9.3. Although the centre will mainly attract research funding from external sources, the centre may seek internal funding based on a business model which will show a long-term return on investment

10. INFRASTRUCTURE AND EQUIPMENT

The JRC-WEST is a virtual research centre, reporting to the respective Executive Deans of the participating Research Units and Researchers, i.e. Faculty of Science and the Faculty of Engineering and the Built Environment based at UJ, and the State Key Lab of Material-Oriented Chemical Engineering (MCE) of Nanjing Tech University, as founding members.

The centre will coordinate utilisation of existing laboratories at both institutions.

11. CONSULTATION WITH OTHER FACULTIES/COLLEGE

Through staff exchange, several UJ Deans and Researchers were hosted at Nanjing Tech to establish collaboration between the two institutions over the last 5 years. The theme of industrialization of zero-net waste technologies was identified by the Faculty of Engineering and the Built Environment as a critical research agenda that should be pursued. Leveraging the strengths of the Key State Laboratory at Nanjing Tech and the Process, Energy and Environmental Technology Station at UJ to drive the collaboration in the respective institutions, FEBE and FoS were consulted to establish the JRC-WEST.

The JRC-WEST will also collaborate with researchers form other Faculties to support multi-stakeholder engagement, policy recommendation, and encourage circular business models, through appropriate technology development, inviting collaboration on a project basis.

12. LIFESPAN AND DISSOLUTION

12.1. The Executive Deans of the Faculty of Science and the Faculty of Engineering and the Built Environment, or their delegated authority serve on the Steering Committee by virtue of their office;
12.2. The term of office of other members appointed (or elected) will be five years renewable by the Executive Deans in consultation with the Co-Director: JRC-WEST;
12.3. If a member of the governance body resigns for any reason before the expiry of the term for which the member was appointed, a successor for the remainder of the term will be appointed/elected by the Executive Deans in consultation with the Co-Director if so required;
12.4. The dissolution of the JRC-WEST can only be done by the University of Johannesburg Senate or the relevant authority of the Nanjing Technology University.

Queries To
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