ETHEKWINI MUNICIPALITY

dac | durban adaptation charter

2021 Annual Report

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EXECUTIVE SUMMARY

This is the 9th edition of the Durban Adaptation Charter annual report. Over the past ten years, the DAC has covered much ground and many friends and partnerships have been forged at the coal face of local government implementation of national climate change policies and international agreements. In its early years, the DAC went through a process of understanding what local government implementation looked like, and how the DAC should be structured to support this. A critical early focus was on building awareness of the need for local action around climate change and advocacy in international negotiations for a seat at the climate change table. Significant work was completed with international partners, like the United States Agency for International Development, US Environmental Protection Agency and Local Governments for Sustainability (ICLEI), to develop DAC governance structures and for outreach with city leaders to sign up to the DAC ten principles of best adaptation practice. Following the first signing ceremony during the initiation of the DAC, a further thirteen such ceremonies were held, with the DAC securing support from local government signatories from 45 countries around the world, mostly from local governments of developing countries. By December 2015, the DAC signatories' database had 1069 signatories. Local government organisations accounted for 728 of the signatories. The balance were individual signatories, either mayors or their assigned representatives.

With the Paris Agreement, and the recognition of non-state actors and adaptation, the advocacy role of the DAC fell away and a full focus was placed on implementing the DAC Hub and Compact approach. To date, a total of nine learning exchange series, mostly between African cities, have been concluded. Topics have predominantly focused upon Community Ecosystem Based Adaptation; flooding, sea level rise, understanding and implementing partnerships for climate change (climate change compacts between local governments, research partnerships for transdisciplinary research and collaborations across tiers of government) and, probably most importantly, developing institutional capacity and engaging with the international processes like the Global Covenant of Mayors. Through these exchanges it has been clear that capacity has rapidly developed in participating cities with the establishment of a number of departments responsible for climate change, the establishment of three climate change compacts and a range of transdisciplinary partnerships. Details of these outcomes have been summarised in two DAC papers which will be submitted for peer review during the first half of 2022. It is noteworthy that the topics covered during DAC learning exchanges have emerged from the recently released Intergovernmental Panel on Climate Change's (IPCC's) Working Group II assessment report on climate change impacts, adaptation and resilience. It is heart-warming that the DAC has been pursuing approaches that are now being realised as (continued) best practice.

The DAC has also been beneficial for its primary driver, eThekwini Municipality, which has functioned as the de facto depository of knowledge for the learning exchanges, and which has been the glue keeping the DAC partners together. The reputational value of the DAC has been matched by opportunities presented to further Durban's own climate change work, like engagement with Cities Climate Leadership Group's (C40's) Cities Finance Facility to develop the Durban Transformative River Management Programme, which is based on principles that the IPCC has recognised as best practice: nature-based solutions, addressing poverty and inequality, inclusivity, collaboration etc. Durban has pushed hard for transversal governance with its Durban Climate Change Strategy (DCCS) governance framework, giving voice to Durban's poorest communities and benefiting from excellent political and administrative leadership.

During the Covid-19 pandemic, the DAC secretariat has managed to continue supporting the Central KwaZulu-Natal Climate Change Compact, which has grown from strength to strength, and has implemented the Miji Bora project, including a learning exchange with Mombasa, and the excellent development of the latter's climate change programme. Unfortunately, Covid-19 has had a significant negative impact upon Durban's budget and this has resulted in the loss of funding for a key staff member within the DAC Secretariat. Whilst Durban will continue to support DAC efforts, the Secretariat will have to focus only on core DAC activities within the DAC Hub and Compact approach. As such, this will be the last DAC annual report that is published in this series. It has been a memorable journey producing this report every year, and the City can look back on the series with pride because what is contained in the report is a blue-print for tackling climate change in Africa.

1. Introduction

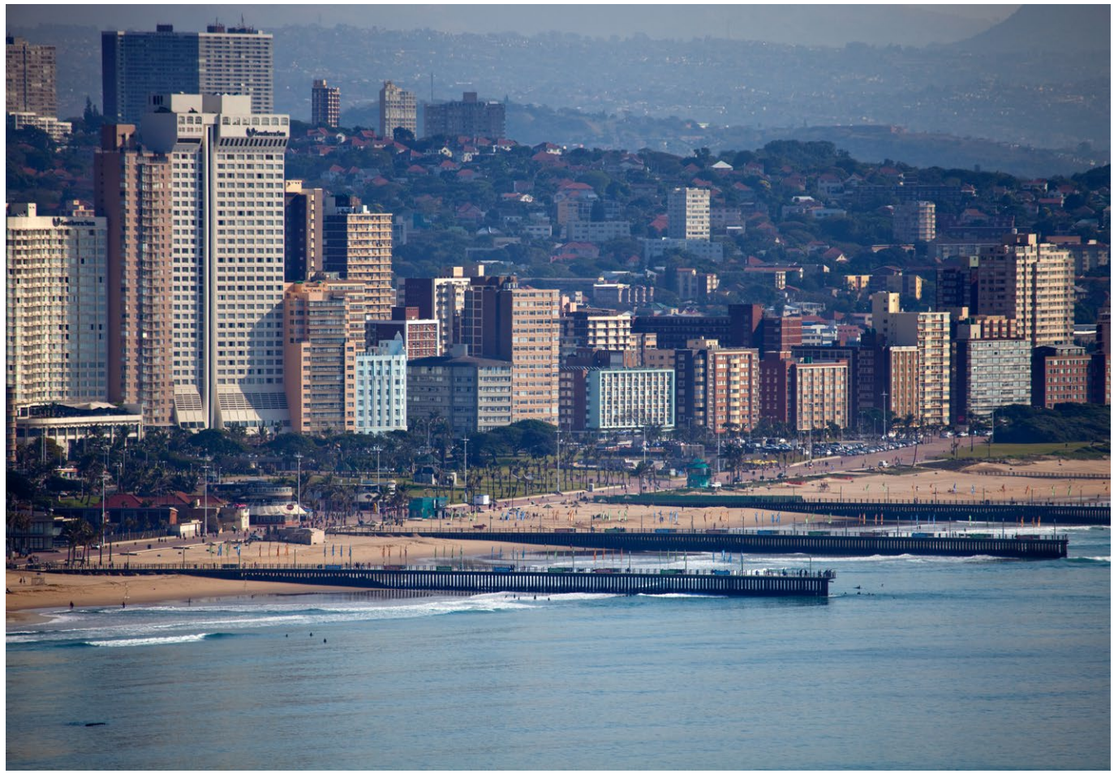
The Durban Adaptation Charter (DAC) was the historic outcome of the Durban Local Government Convention held in Durban, South Africa, in 2011, during the 17th Conference of the Parties of the UN Framework Convention on Climate Change (COP17).

The DAC commits signatories to ten principles of best adaptation practice (see Textbox 1), all of which align with the articles in the Paris Agreement. Following the initiation of the DAC in 2011, a Secretariat managed a database of local government signatories from 45 countries around the world, mostly from local governments of developing countries. By December 2015, the DAC signatories' database had 1069 signatories. Local government organisations accounted for 728 of the signatories. The balance were individual signatories, either mayors or their assigned representatives.

Ten Principles of the Durban Adaptation Charter:

1. Mainstream adaptation as a key informant of all local government development planning.
2. Understand climate risks though conducting impact and vulnerability assessments.
3. Prepare and implement integrated, inclusive, and long-term local adaptation strategies designed to reduce vulnerability.
4. Ensure that adaptation strategies are aligned with mitigation strategies.
5. Promote the use of adaptation that recognises the needs of vulnerable communities and ensures sustainable local economic development.
6. Prioritise the role of functioning ecosystems as core municipal green infrastructure.
7. Seek the creation of direct access to funding opportunities.
8. Develop an acceptable, robust, transparent, measurable, reportable, and verifiable register.
9. Promote multi-level and integrated governance and advocate for partnerships with sub-national and national governments on local climate action.
10. Promote partnerships at all levels and city-to-city cooperation and knowledge exchange.

The realisation of the Paris Agreement brought a change in focus from advocacy to implementation for the DAC Secretariat, which thereafter no longer sought to attract new signatories, but rather focussed efforts on implementation through the DAC Hub and Compact Approach. Since that seminal DAC workshop in 2013, the DAC Secretariat has initiated several local and global learning exchanges throughout the years and has successfully initiated the Central KwaZulu Climate Change Compact that has encouraged other cities to do the same. All progress on the implementation of the DAC has been reported in a series of annual reports from 2013 to 2021. The 2021 DAC annual report outlines the progress made in respect of DAC implementation during 2021. This is planned to be the final report in this series.



2. DAC Implementation

2.1 Overview of DAC Hub and Compact Approach

The DAC Hub and Compact approach essentially describes a network of networks engaging in collaborative climate change adaptation action. The development of the DAC Hub and Compact approach started with the establishment of a partnership between Durban and Fort Lauderdale/ Broward County in Florida, USA. These two cities, already advanced in dealing with climate change adaptation, engaged in a series of city-to-city learning exchanges that enhanced peer-to-peer learning outcomes within areas of mutual adaptation interest.

They formed the first two Hubs in the network. A direct outcome of the International Cities/ Counties Management Association-supported exchanges was Durban's adoption of a sub-national climate change compact partnership model (hereafter referred to as the Compact model), pioneered by the Florida Hub, who had previously developed the Southeast Florida Regional Climate Change Compact. The Central KwaZulu-Natal Climate Change Compact (CKZNCCC) was established in January 2014 and is still going strong today.

The establishment of the partnership between these first two Hubs, each with its own Compact, was the genesis of the development of the "Hub and Compact" approach. It was envisaged that a number of Hubs, each with its own Compact, would develop partnerships to effectively develop a network of networks across Africa to address climate change adaptation. Exchanges between Hubs through city-to-city partnerships have, as their intended outcome, the establishment of compacts for hubs participating in exchanges.

During 2017, a series of exchanges were concluded with Northern Mozambican Hubs, and the Compact of Coastal Cities of Mozambique emerged. By entering into Compact partnerships with a Hub, local and district municipalities agree to work collaboratively in addressing climate change. This provides an opportunity for a coordinated climate change adaptation response that transcends local political boundaries. It allows for the sharing of skills and capacity within the Compact partnerships and the development of project proposals, which can be submitted for funding through National Implementing Agents for international funding mechanisms. Between 2018 and 2020, a further two series of learning exchange programmes were convened, firstly between Durban and Lusaka, Zambia and then Durban and Mombasa, Kenya. The latter series is convened under the Miji Bora programme and the 2020 Annual Report covered the first in-person exchange. The conclusion of this latter series is dealt with in this 2021 Annual Report.

A key component of the DAC Hub and Compact approach is connecting Hubs and Compacts to their national counterparts to ensure the flow of information and coordination between local and national level governments. Within the CKZNCCC, there are strong links to provincial and national government and bodies, with the chair of the Compact currently held by the provincial representative of the South African Local Government Association. This link with national bodies dealing with local governments has been replicated in other compacts, like the Northern Mozambique Compact.

Compact implementation is guided by the development of transdisciplinary research partnerships realising the co-generation of knowledge that will help cities make suitable development decisions appropriate for a climate change future. By way of example, the Central KwaZulu-Natal Climate Change Compact is supported by the Durban Research Action Partnership. The DAC Secretariat works closely with the DRAP Secretariat to ensure that other African Hub cities develop similar research support. This is being done through the Urban Climate Change Research Network and the development of the EPIC-Africa network (see implementation during 2021 below). During 2018 and 2019, exchange visits were conducted with Lusaka, Zambia, who co-led the development of the EPIC Africa network, and during 2020 with Mombasa within the Miji Bora project.

The DAC Hub and Compact approach to climate change adaptation in Africa is shown in Figure One below.

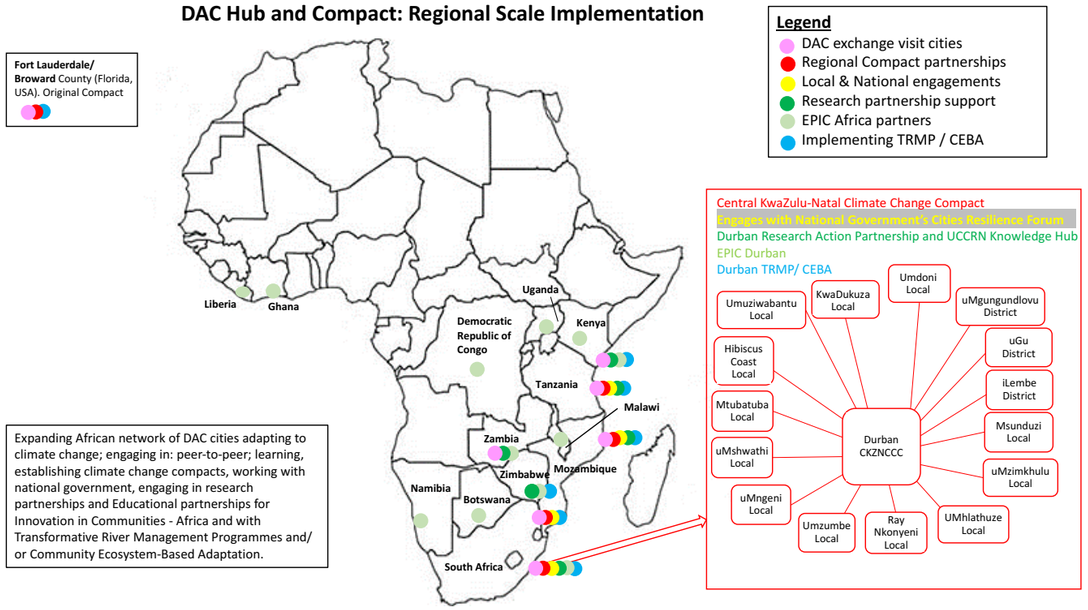
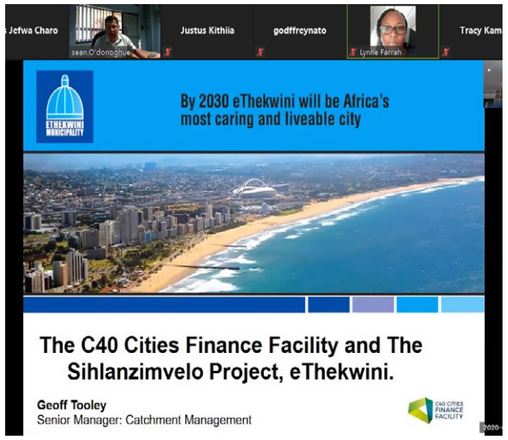


Figure One. *DAC Hub and Compact approach to climate change adaptation in Africa showing: history of city-to-city peer learning exchanges, establishment of climate change compact partnerships, cities engaging with their national and provincial governments for climate change, establishment of formal research partnerships and EPIC Africa and cities implementing Transformative River Management Programmes (or initiating such.*

2.2 DAC Implementation during 2021

During 2021, Covid-19 continued to impact upon how city officials worked with their communities and each other. The city of Durban has learned to adapt through remote meetings and by following strict Covid-19 protocols and has managed to continue the good work of the DAC by creating new partnerships and by conducting project work through this new online normal.

During 2021, the Miji Bora project continued to be impacted by Covid-19, particularly in terms of the Peer-to-Peer (P2P) learning component. During 2020 Durban and Mombasa had to replace the in-person Mombasa P2P visit to Durban with three online workshops that resulted in sustainability solutions being shared with the Kenyan County of Mombasa. Topics covered included Transformative River Management, the green and circular economies, sustainable waste and wastewater solutions and Educational Partnerships for Innovation in Communities (EPIC). Following these exchanges, two draft manuscripts are almost complete outlining the P2P framework. These will be submitted for peer review early in the new year. The Western Indian Ocean Marine Science Association's Annual Grantees meeting was convened early in December 2021. The Miji Bora project reported back successfully on their work. The project has been granted a six-month extension to complete the project deliverables.



Participants in the online learning exchange session on Durban's Transformative River Management Programme.

During the year, our surrounding municipalities continued to learn from each other and build capacity for implementation through the Central KwaZulu Climate Change Compact (CKZNCCC) that met virtually. A key work focus for the CKZNCCC was the development of TRMP concept notes by Compact members, supported by C40 and eThekwini Municipality. A joint Compact meeting with officials from Mpumalanga also led to the Mpumalanga Provincial government forming their own climate Compact, with the launch of the Mpumalanga Compact of Mayors in December 2021, and which we hope to work closely with in the future.

The Durban Adaptation Charter has been active in the Urban Climate Change Research Network (UCCRN) through planning for and mentoring of chapter teams in the Third Assessment Report of Climate Change in Cities (ARC3-3). Dr Sean O'Donoghue is co-shepherd for the Equity, Development and Informal Settlements element, and during 2021 co-led the publication of a special edition on coastal adaptation of small cities and towns within the journal Ocean and Coastal Management. Dr O'Donoghue was the lead author of a chapter on adaptation in small coastal cities and towns. During the year, Durban worked closely with UCCRN to co-host a special GIS training event for Durban Municipal officials and GIS students at the University of KwaZulu-Natal.

During 2021, eThekwini Municipality officials continued to work closely with the C40 Cities Finance Facility (CFF) to develop Durban's Transformative River Management Programme (TRMP), which aims to improve management of, and climate change adaptation in 7,400 km of the city's streams and rivers, helping to reduce the climate change impacts in the city in relation to flooding, drought and higher temperatures. During the development of the business case to guide investment in these rivers and streams, the TRMP project team worked closely with Compact members to develop their own concept notes for their own TRMPs. This was followed by an engagement with the Provincial Department of Economic Development, Tourism and Environmental Affairs (EDTEA) to discuss the rollout of the TRMP concept within Compact member projects. Through the Miji Bora project, Mombasa has initiated its own TRMP programme, and Harare is busy planning its TRMP programme through engagement with EPIC Africa.

What rivers looks like before (left and middle) and after (right) adoption within Durban's Transformative River Management Programme.

2.2.1 Miji Bora project implementation

The Miji Bora project is funded by the Western Indian Ocean Marine Sciences Association (WIOMSA) within its Cities and Coasts programme. The aim of the Miji Bora project is to develop and prototype smart and sustainable solutions for a climate resilient County Government of Mombasa (CGM). The peer to peer (P2P) learning component of the Miji Bora project seeks to develop and test a framework for P2P learning between cities, critically assessing the efficacy of the CGM experience.

During 2020, a return exchange by a Mombasa delegation to Durban was planned for March, and all preparations were complete when, a week before the planned event, Miji Bora project leaders met and agreed to postpone the event due to Covid-19. By June, it was apparent that the return exchange would not be held any time during 2020, so an alternative approach was planned, through a series of webinars covering topics that would have been dealt with during the in-person exchange. The two live exchanges focused on Transformative River Management and Sustainable Waste Water Solutions. A third recorded webinar focusing on the Green Economy Associated with Durban's Solid Waste was made available to officials from County Government Mombasa.

Participants in the first Durban – Mombasa learning exchange within the old Mombasa railway park. The park is being used to test the value of fragrant flowers and trees for relaxation in a Mombasa Technical University EPIC project.

In response, the Mombasa officials hosted a series of online workshops to develop the County's sustainability and smart plans, which will be piloted next year. During 2021, because of the uncertainties around Covid-19, and especially with the onset of the Delta and Omicron variants, it was not possible to complete the return in-person visit to Durban. Despite this, a number of achievements were noted during the WIOMSA annual grantees meeting in December:

- During 2021, a Master's student completed the defence of her thesis within the P2P component of the study. The title of her MSc research was "Determinants of Solid Waste Management Performance in Mombasa County, Kenya".
- Following the P2P exchange visits Mombasa initiated the following programmes: EPIC Mombasa research programme responding to Covid-19 and the Mtopanga Transformative River Management Project.
- Two draft Durban Adaptation Charter manuscripts, which are being finalised for peer review (the second of which, below, puts forward a P2P framework):
    - O'Donoghue, S., Kithiia, J et al (in prep) Durban Adaptation Charter: proposed city-to-city peer learning framework to support climate change adaptation on the African continent.
    - O'Donoghue, S., Socci, T. and D. Roberts (in prep) Pathways through Adaptation: Lessons from the Durban Adaptation Charter.
- Situational analysis on Mangroves in Mombasa to understand and conceptualise link between natural capital and sustainable development; and understanding the role of health and resilient ecosystems to the achievement of sustainable coastal development goals.
- Situational analysis on stakeholder's engagement workshop to identify the role, challenges and relationships of key stakeholders in addressing the said main drivers of the urban form. The workshop found that most stakeholders have a high interest and influence on several thematic Miji Bora areas, but that they were operating in silos and there was poor service delivery. Common areas of collaboration were identified, and a multi-sectoral collaboration platform was established called the Mombasa County Sustainable Forum. This forum was modelled on the DCCS Technical Task Team (TTT) and has different working groups reporting to the forum.
- Climate change and adaptation policy and Climate and Ocean Risk Vulnerability index assessments were completed in Mombasa. A workshop is planned to unpack the policy, including adjacent counties, to test key recommendations from the policy in order to develop an adaptation strategy. Usually, this kind of work is done by consultants so this represents the first time a research partnership is guiding the process and is analogous to the EPIC model.
- Two hackathons were completed on solid waste and climate change respectively.
- A prototype solid waste management mobile app and dashboard were developed.

During 2022, the WIOMSA Cities and Coasts programme principle investigators would like to see the completion of the in-person exchange visit to Durban. This will very much depend on whether Covid-19 can be vanquished in the next six months. It is possible that a final virtual exchange could be hosted should an in-person exchange not be possible.

2.2.2 Central KwaZulu-Natal Climate Change Compact

2.2.2.1 Updates from CKZNCCC members:

Durban

The key climate change strategic work in Durban is the Durban Climate Change Strategy (DCCS), which was approved by the eThekwini Municipal council in June 2015. This was followed by the approval of the Durban Climate Action Plan (CAP) in October 2019. The eThekwini Municipality has recently completed the process of the first five-year review of the DCCS and has developed a fully integrated implementation plan for the DCCS (and the Durban Climate Action Plan), that will take the strategy from "planning to implementation". This process of developing the implementation plan included several components:

- Reviewing and updating the DCCS;
- Multiple external and internal stakeholder engagement processes;
- Developing theme-specific implementation plans across different sectors;
- Developing a monitoring and evaluation framework and reporting tool; and
- Developing a communication framework.

The process to review the DCCS and develop the implementation plan was started in August 2019 and concluded in June 2021. Currently we are preparing for the implementation of the plan by working with line functions to populate the Monitoring and Evaluation (M&E) framework with baseline data in preparation for our process to seek Council approval for the DCCS Implementation Plan and M&E Framework. The 2020/21 DCCS annual report provides an update of the progress made during the financial year.

KwaDukuza Local Municipality

KwaDukuza Local Municipality has implemented the Invasive Alien Plants Clearance Programme at Etete Primary School & Zilungisele Primary School in partnership with the Department of Economic Development Tourism & Environmental Affairs. They have also finalised the Climate Risk and Vulnerability Assessment and had an approval of the Small-scale Embedded Generators (SSEG) Policy by Council. The Greening of the Central Business District Library Project was initiated with the aim of ensuring that the current water and electricity consumption of the library is decreased, thereby improving the energy and resource efficiency of the building which emanates from the Council approved Green Building Guidelines policy. KwaDukuza was to be internationally recognized by the British Council and WWF where five cities were selected worldwide to showcase their local climate action initiatives. KwaDukuza's Invasive Alien Species Project Implementation was another project initiated where the objectives were for the Municipality to not only provide a service to the communities but to also empower the people, especially the youth by providing socio-economic benefits through job creation and skills development to improve their wellbeing and livelihoods and ultimately to create a safe environment and build climate change resilience in communities. KwaDukuza Municipality participated in the Greenest and Smart Municipality Competition, as well as the Natural Resource Management Competition from KZN EDTEA.

uMhlathuze Local Municipality

The uMhlathuze Municipality has been participating in the One City, One Planet Challenge supported by the WWF. Through the work with the uMhlathuze Water Stewardship Partnership (uWASP), water losses were assessed, and it was found that water losses were largely experienced due to illegal connections in informally-settled areas. A drone has been sponsored by the GIZ (German Agency for International Cooperation) and will be put to work to track and monitor the spatial dynamics, including settlement trends, as well as changes to biodiversity. Through this process, the GIZ also funded pilot license training for municipal officials and to date, two officials have passed their remote pilot licenses.

The uMhlathuze Municipality has also been identified as a pilot municipality by National Treasury for Climate Budget Tagging (CBT). CBT identifies, classifies, weights and marks climate relevant expenditure and/or other elements in the public finance system and is intended to improve monitoring and reporting of climate related finance and strengthen links between planning and budgeting.

UMhlathuze has also entered into a Memorandum of Understanding (MoU) with the Green Development Foundation (GDF) and are exploring opportunities for the GDF to assist with a range of projects such as the Transformative Riverine Management (TRM) project and renewable energy. Opportunities for collaboration on existing initiatives relating to waste recycling, indigenous greening, organic agriculture and alien invasive clearing are also being explored. Reporting is also ongoing on the CDP/Race of Resilience.

Institutionalising Partnerships and use of Drone Technology

Msunduzi Local Municipality

Msunduzi Municipality has appointed a service Provider to undertake a Baseline Assessment of City Hall in terms of electrical, energy, waste and water data and noting areas for increased optimization. Site inspections were conducted to the City Hall building to collect data on the types of lighting and appliances being used. The service provider will identify short term and long-term strategies for implementation to reduce consumption levels. Outputs included:

1. Baseline assessment of City Hall to evaluate electrical, energy, water and waste data and noting areas for increased optimization
2. Building Users Guide
3. Summary of Recommended Interventions with High-level Costs

Gap funding is being pursued for a Risk and Vulnerability Assessment for the City.

Discussions are underway between relevant municipal business units regarding the integration of Climate Change Mitigation and Adaptation into the IDP. The Environmental Management Unit is in the process of updating the Environmental Management Framework (EMF) and spatial datasets for the City. This will also see the incorporation of the additional wards that are now part of Msunduzi Municipality. The Town Planning Unit is in the process of developing an Urban Network Strategy which will also see additional incorporation of environmental and climate change related factors. Reports have been submitted to Council Committees for political support and approval to participate in the Cities Race to Zero and Cities Race to Resilience initiatives being spearheaded by ICLEI and the CDP. In attempts to protect and safeguard the remaining open spaces within the city, the environmental management unit has taken a decision to retain open spaces subject to certain conditions being complied with.

Mpumalanga

Mpumalanga has mitigation and adaptation strategies that are in the process of implementation. They are building on the 'Just Transitions' information they gathered which will be used to implement the mitigation strategy and work with industry, sector departments, communities and municipalities in finding ways for lowing carbon output. There are tree planting initiatives amongst others that are ongoing and the community's issues surrounding the changes are also something they are aware of. The 'Just Transitions' document will be sent to the CKZNCCC for comment. The Mpumalanga compact launch was also planned and implemented in December 2021.

2.2.2.2 Summary of CKZNCCC meetings

The CKZNCCC went through a new Chair election in 2021 due to the previous Chair moving position in the municipality and the KZN representative from the South African Local Government Association (SALGA) was elected in her place. Quarterly online meetings were held in March, June, September and November of 2021 where presentations were made, news and highlights were shared and municipal updates for each quarter were discussed.

In the first meeting on the 11th of March, uMhlathuze Local Municipality were congratulated on winning the Greenest City Award. Mpumalanga confirmed they would be starting their own Compact which was one of the successes of the DAC highlighted at the meeting. The Compact of Mayors launch was also discussed as a key outcome for 2021 that will be arranged around the many Covid-19 restrictions in place for the year. Municipal environmental compliance benchmarking was discussed by SALGA and an appeal was made to compact members to participate. A call for input into the 2020 annual report was also made at the meeting.

In the second meeting for the year on the 18th of June participation in the COP26 was endorsed and it was agreed that the Compact will have a new Chair election, with a set of guidelines on roles and responsibilities of the Chair and DAC secretariate laid out. An ad hoc steering committee also helped guide that process, but it was agreed that the ownership of the Compact would still lie within the municipalities and Chairing can be rotated if need be. A social media platform was discussed, and guidelines were developed for the management of these pages. A presentation was made on the DFFE and GIZ support program for Climate Change Strategy Development by service providers from Urban Earth who were appointed to source input for the strategy. SALGA also introduced the municipal support program for climate change and environmental services which EDTEA provided an update of the KZN Provincial Climate Change & Sustainable Development Council Resolutions and feedback from NDC's consultations and expectations.

The third meeting held on the 17th of September highlighted the call for the participation in the Race to Zero campaign and COP26. DFFE provided a presentation on the Ten Million Tree Project implemented in cities and the Arbour City Award KZN winners were mentioned as it was Arbour month. SALGA then discussed the Climate responsiveness of KZN District Development "1st Generation One Plan's" and urged municipalities to provide feedback on the plans for that adequate budget would be assigned. EDTEA provided a brief update on the Green Economy Projects.

In the final meeting of the year held on the 19th of November, an update of the race to Zero campaign was presented and feedback from the COP26 was provided by eThekwini Municipality. EDTEA provided an update on the KZN Climate Change Strategy being developed and engagement with the strategy was encouraged. Feedback for the new 2021 DAC annual report was also requested and the dates for the next year's meetings were established.

2.2.3 Mpumalanga Compact of Mayors

The Department of Agriculture, Rural Development, Land & Environmental Affairs and the CKZNCCC, in collaboration with the South African Local Government Association (SALGA), Cooperative Governance and Traditional Affairs (COGTA), & ICLEI hosted a *Compact of Mayors and Administrators and the Provincial Climate Change Information System* launch from 8-9 December 2021 which sought to address key issues of accessing green funds for financing Climate Change at local level. The dialogue also aimed to strengthen intergovernmental relations between neighbouring countries and global city networks of Mayors. It was launched with the Provincial Climate Change Information System to inform reporting under the Medium Term Strategic Framework (MTSF) Priority 5 and international reporting commitment under the United Nations Framework Convention on Climate Change (UNFCCC).

The meeting began with a welcome from the Mpumalanga executive Mayor who expressed that they are responding to the national call to address climate change. It is mostly rural areas that are hit the hardest. The climate strategy was formed through hard work and many consultations. Mpumalanga has completed several biodiversity and ecosystem assessments and retrofitted multiple buildings. They have also approved green buildings. Funding is being sourced and currently they have received climate finance gap funding for river management. The Mayor thanked eThekwini Municipality and C40 for making this a reality. His Worship stated they are fully committed to the MEC's pledge to reduce GHGs and to national government commitments on climate change. The MEC addressed all gathered and began by highlighting that the Public Bill means everyone has the right to a clean and healthy environment. He said that everyone was gathered there to build partnerships today as climate change is a known threat and it is going to get worse before it gets better. Carbon emissions need to be reduced while nature-based solutions need to be endorsed. Adaptation needs to be mainstreamed into policies and planning.

Zama Khuzwayo from eThekwini Municipality provided a presentation on the Durban Adaptation Charter, Hub and Compact approach and the Central KwaZulu-Natal Compact (CKZNCCC). Compact members share and learn from each other and have encouraged other municipalities, such as Mpumalanga, to develop their own climate compacts. Dudu Sibiya from Mpumalanga spoke about the National Climate Change Response Policy and addressed the participants saying that "climate change starts with you, every department, every person". Mpumalanga is prone to flooding, drought and hail and with existing vulnerabilities there is now an opportunity to get policies in place and apply for climate funding. As they have started projects, more awareness has been raised. Even though waste management is a problem, it is also an opportunity and that is how municipalities need to look at these types of issues. There are mothers picking up waste so the question should be asked on how we can work this into the economy. Challenges drive us to formulate solutions. She said that climate change is a cross cutting issue - it is a development issue. Presentations on various tools on climate change, information systems and response toolkits were discussed. Day two of the launch focused on how weather services need to be people oriented to produce climate information for climate change adaptation. As temperatures are set to increase, drought is a hazard and needs paying attention to for food and water security. A project on square foot gardening was presented highlighting an adaptation measure that should change the way we view access to food. It was stated that adaptation should receive the same attention as mitigation as the water, food, energy nexus all affect each other. This can be managed through cooperative governance and intergovernmental planning.

2.2.4 Cities Resilience Forum

The Cities Resilience Forum (CRF), led by the South African national government's Department of Forestry, Fisheries and Environment (DFFE) has continued to work through the metropolitan municipalities in the country, to prepare for climate change, particularly through their Climate Support Programme.

The CRF met twice during 2021, in February and June respectively. During the meetings participants reviewed the Cities Resilience Indicators from the Indicator Framework. A session was held to update Circular 88 and provide feedback on the status of C488 implementation and establishment of a technical working group. Another focus of discussions was the integration of the Built Environment Performance Plans guidelines into city Integrated Development Plans.

2.2.5 Urban Climate Change Research Network

2.2.5.1 Urban Design Climate Workshop – Training

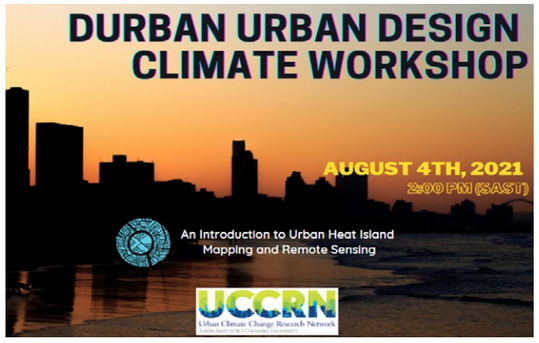
As part of its mandate to oversee implementation of the Durban Climate Change Strategy, the City's Environmental Planning and Climate Protection Department relies on research to guide evidence-based decision making in a world that is increasingly being impacted by global change. The City has had a long-standing research relationship with the Urban Climate Change Research Network, having been the third Knowledge Hub to be established in the UCCRN Knowledge Network back in 2015.

Of critical importance is building local capacity to meet the City's growing knowledge needs. In February 2019, UCCRN co-hosted the isiPhingo Urban Design Climate Workshop to support the ongoing isiPhingo rehabilitation project by providing solutions to climate change and inappropriate development, and to build local capacity in municipal staff and local students. In clearly articulating the link between this GIS training workshop and the 2019 isiPhingo UDCW, Professor Mattia Leone, who co-leads the UDCW work, emphasised the importance of putting local residents at the centre of co-designed solutions for climate protection and sustainability.

To further develop local capacity, UCCRN led a virtual remote-sensing heat-mapping GIS training course on 5th August 2021. The development and delivery of the course was led by Dr Christian Braneon of NASA's Goddard Space Institute along with his team of talented post- and undergraduate students, that even includes a high school learner. The course was attended by 78 University of KwaZulu-Natal under- and post-graduate students and

eThekwini Municipality officials. The aim is that eThekwini Municipality officials will develop the skills to produce heat maps of hot spots to guide local action. Through live polls, conducted during the training, it was clear that the majority of participants were familiar with remote sensing data and were either at an intermediate or advanced GIS skill level. It is, therefore, anticipated that the training will contribute towards local ability to produce products of use for the City.

EThekwini Municipality would like to thank UCCRN for their generous sharing of skills and time to benefit our local talent. It is hoped that emerging from this training session will be planning for a second UDCW in Durban, hopefully early in 2022.

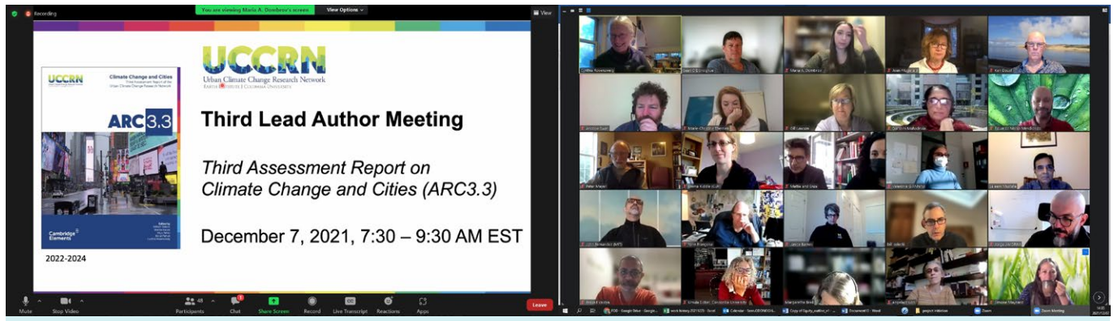


2.2.5.2 Ocean and Coastal Management Special Issue

The DAC Secretariat has co-edited a special edition of the Ocean and Coastal Management journal with other UCCRN knowledge hub directors, with six papers published in the special edition during 2021. Within the special edition, a typology (framework) for collecting information on climate change adaptation challenges and initiatives in small coastal settlement was developed. Dr Sean O'Donoghue led the chapter on coastal adaptation in small coastal cities, and was a co-author in another three chapters. The special edition shines a light on the lack of resources of small coastal habitations who are substantially under-represented in the global climate discourse (compared with the more charismatic coastal megacities).

2.2.5.3 Third Assessment Report on Climate Change and Cities

UCCRN is currently leading the development of a third edition of their useful and popular climate change and cities series. This edition is broken down into elements which will be published as semi-stand-alone pieces when they are ready (so it is not necessary to wait for all elements to be prepared before publication). Dr Sean O'Donoghue is co-shepherd on the Equity, Development and Informal Settlements element. During December, the second lead author meeting for ARC3-3 was convened and elements are progressing nicely. The Equity element is due for completion in 2022.



Participants at the third lead author meeting for the Third Assessment Report on Climate Change and Cities convened on 7th December.

2.2.6 Educational Partnerships for Innovation in Communities - Network (EPIC-N)

Educational Partnerships for Innovation in Communities (EPIC) is a unique but radically simple model that systematically matches the real-world needs of cities and local governments with the skills, intellectual resources and creativity of university students and faculty. The matching process is designed to enhance the capacity of cities and communities to become more sustainable, resilient, and adaptable to climate change. An EPIC partnership fosters community innovation and leverages the largely untapped expertise concentrated in a university geared towards tackling real-life sustainability challenges within a community or city, which in turn provides university students the applied learning experiences that they need to further develop professionally. The EPIC model is highly adaptable to different governance structures, localities, cultures and content areas. Moreover, EPIC partnerships and EPIC networks tend to be self-sustaining, self-supporting and self-led.

The EPIC-Network (EPIC-N) is the collection of institutions that have successfully adopted this new model for community innovation and change. There are currently 38 institutions implementing this model, mostly in the United States of America. In addition, because of this growth in the number of institutions implementing the model, EPIC-N members have established a secretariat, along with an executive and advisory board, to support the information and training needs of its members, document and share the growing number of successful EPIC projects undertaken and to continue to expand the network. Dr Sean O'Donoghue represents the DAC on the Advisory Board, which met most recently during December. Now ten years in the making, EPIC-N members have completed well over 1200 projects resulting from various implementations of the EPIC model representing hundreds of thousands of student hours devoted to these projects to.

In May 2021, the EPIC Asia network was launched following an online training event. With the appointment of a network coordinator, the network has really taken off and there are an accumulating number of projects being implemented in southeast Asia.

2.2.6.1 EPIC Africa

Covid-19 has continued to badly impact upon efforts by African researchers to establish EPIC programmes in their academic institutions. Whilst some gains were made, like the University of Botswana signing an implementation agreement with Gaborone, and Durban's progress below, most of the EPIC Africa network did not manage to report progress during the year. This is understandable given that establishing an EPIC programme requires a lot of knocking on doors and face to face conversations. Early in 2022, effort will be put into finding out what the EPIC African members require in terms of support from EPIC-N. The network co-chairs, Dr Gilbert Siame (Lusaka) and Sean O'Donoghue (Durban) will oversee efforts to get EPIC Africa back up and running.

2.2.6.2 EPIC Durban

EPIC promotes action-oriented research partnerships between local governments and universities, focussing research on communities with challenges. EThekwini Municipality, through the Durban Research Action Partnership, piloted an EPIC programme focussed on understanding climate change challenges and solutions in one of the City's informal settlements during 2018/19. This successful pilot produced enough useful information for the partners to pursue an upscaling of EPIC activities during 2020 and 2021. Unfortunately, Covid-19 has had a negative impact upon student activities but said students have still managed to implement a number of projects through the schools of Built Environment and Development Studies and Engineering, producing, amongst others policy briefs on Covid-19 impacts in informal settlements and studies on Durban's Sustainable Urban Drainage Systems, respectively.

An integral focus of EPIC Durban at UKZN is not only to promote interdisciplinary approach, but also to build capacity for young professionals and students, and this aligns well with the national focus on capacity building. During 2021 academic year, EPIC focused on expanding the programme across various departments and colleges at UKZN. Interactions were made with the Geography department, and the College of Agriculture, Engineering & Science. UKZN researchers showed a keen interest in the programme, but required a memorandum of understanding [MOU] that would highlight and guide the research specifics. Formal partnership agreements are currently being drafted so that EPIC Durban can continue to engage with these departments and researchers to mitigate the challenges impacting the city during the COVID-19 pandemic and beyond.

Students from School of Engineering, Surveying and Construction investigated the effectiveness of Sustainable Urban Drainage System which the municipality has been using.

3. DAC Communication during 2021

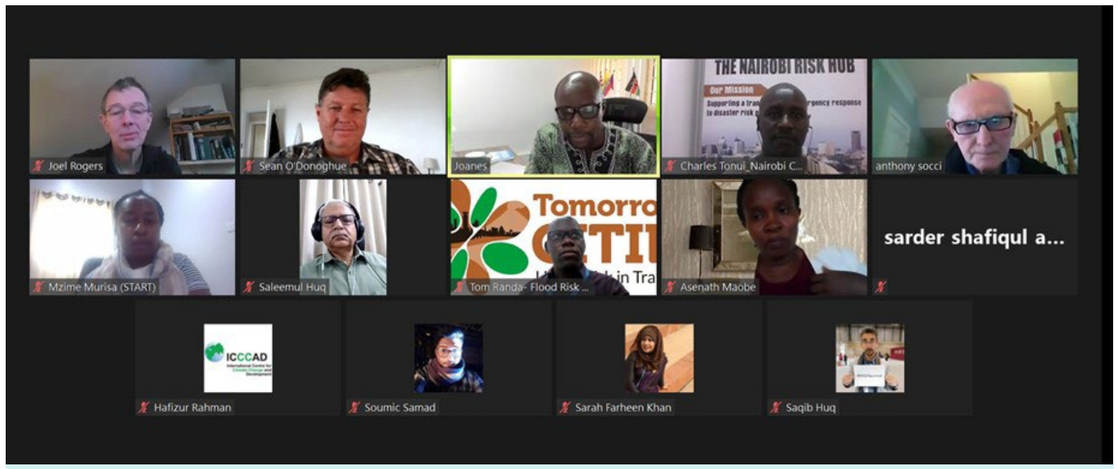
As can be expected, most of the events reported here relate to online events because of Covid-19. The DAC Secretariat has yet to embark on an aeroplane to attend an international event since the advent of Covid-19. Whilst this has no doubt saved much carbon, the draft DAC paper (see Miji Bora section) has noted how the opportunity for networking and identifying collaborative partners and funding opportunities has diminished with the switch to online events. Nonetheless, below is a description of international, national and local events attended either in person, or virtually, during 2021.

3.1 International Events:

3.1.1 Gobeshona 7

Gobeshona is a knowledge-sharing platform, initiated in January 2014. It aims to bring together the national and international Climate research community to encourage sharing and making climate change research in Bangladesh more effective. Interested Institutions that conduct climate change research or those who implement research into use, are welcome to join this platform. Currently, more than 40 diverse organizations from across the globe, have collaborated to disseminate climate change-related literature, events, opportunities, and ongoing research in Bangladesh. We encourage online interaction between researchers, and other interested parties, to register to connect with others.

The 7th Gobeshona International Conference on Research into Action was held from 21-24 January 2021, focusing on the theme - Locally Led Adaptation Action, among others. This year, the conference was held online (virtually) with many National, International participants and high-level guests hosting different geographical sessions from across the globe. The DAC participated in the Gobeshona conference session titled Building Resilience in Future African Cities through Africa research. This EPIC-focused session convened on January 20th and was moderated by Dr Tony Socci, Senior Policy Lead at the United States Environmental Protection Agency. Dr Sean O'Donoghue presented the EPIC Africa network to set the scene for the panel discussion, in which EPIC-N Chair, Professor Joel Rogers and Dr Mzime Nedebele-Murisa participated.



Participants of the Gobeshona 7 virtual conference held in January 2021. The session focus was on Educational Partnerships for Innovation in Communities (EPIC) Networks.

3.1.2 7th Asia Pacific Adaptation Network Conference

Co-hosted by the Ministry of the Environment of Japan (MoEJ), the Secretariat of the Asia Pacific Adaptation Network (APAN) and the United Nations Environment Programme (UNEP), the 7th Asia-Pacific Climate Change Adaptation Forum 2020 was held on 8-12 March 2021, in a virtual format.

With over 2,900 people registered on the conference platform (Hubilo), and over 900 unique Forum attendees from over 62 countries, including representatives from Governments, Intergovernmental Organizations, United Nations bodies, Civil Society Organizations and other entities, the forum concluded with a set of recommendations under the forum's five enabling conditions.

Forum's participants were enriched by the experiences, perspectives and insights shared during the Special Event - Global Adaptation Network (GAN): Now and Future - on 10th March. The session was well attended and shone a spotlight on the EPIC Asia network which was due for launch in May (and was indeed launched then).

3.1.3 ICMA Unite Conference

The International Cities/ Counties Management Association (ICMA) is the premier association of local government professionals committed to developing and promoting best practice in governance at the subnational level. ICMA represents more than 13,000 local government professionals committed to enhancing the quality and performance of local government administration worldwide. Since 1914, ICMA has implemented over 500 programs in more than 70 countries, delivering hands-on assistance by tapping into the knowledge and skillset of its members who provide long-term learning, mentorship, and partnership opportunities for their counterparts in local government.

For more than 100 years, ICMA has offered the premier annual conference for local government leaders, managers, staff, and stakeholders. Held in person in cities across the United States and Canada, the conference attracts thousands of registrants, nearly 300 exhibitors, and features more than 100 educational opportunities. The 2019 conference in Nashville included more than 5,000 attendees from local governments, non-profit organizations, academia, and the private sector. Since 2020, this conference has been held virtually to minimise risks associated with in person meetings due to Covid-19.

Dr Sean O'Donoghue, DAC lead and co-Chair of the EPIC Africa network, participated virtually during the 2021 conference with a presentation outlining how the climate change adaptation work of the City of Durban is addressing both a just transition as well as other development challenges, whilst preparing the city for climate change impacts. The presentation drew heavily upon the city's Community Ecosystem-based Adaptation (CEBA) approach and gave examples like Durban's Transformative River Management Programme and Educational Partnerships for Innovation in Communities (EPIC) Africa, using the DAC Hub and Compact approach to advance this work across the African continent.

3.1.4 MCR: Climate Action Planning and Finance webinar

Co-hosted by C40 Cities, the UN Office for Disaster Risk Reduction and Making Cities Resilient (MCR), the MCR: Climate Action Planning and Finance webinar was held on 3rd June 2021. The event was held in English, but with simultaneous translation into Arabic and French.

C40 Cities is one of the Core Partners of Making Cities Resilient 2030 (MCR2030). This webinar aimed to provide an introduction to C40 and the service offered by its Adaptation Programme and Climate Finance Facility which can support cities to progress along the resilience roadmap. Experience from C40 cities, in particular, Durban's Transformative River Management Programme was shared.

Speakers included Chantal Oudkerk Pool, Head of Adaptation Planning and Jessy Appavoo, Senior Manager of C40 with Sean O'Donoghue of eThekwini Municipality. In total there were 325 participants joining from 81 countries. Further information and a recording of the event can be found here.

Participants of the Making Cities Resilient: Climate Action Planning and Finance webinar held on 3rd June 2021. The session included a presentation on Durban's Transformative River Management Programme.

3.1.5 UNEP: Resilient, Smart and Sustainable Cities: the power of nature-based solutions

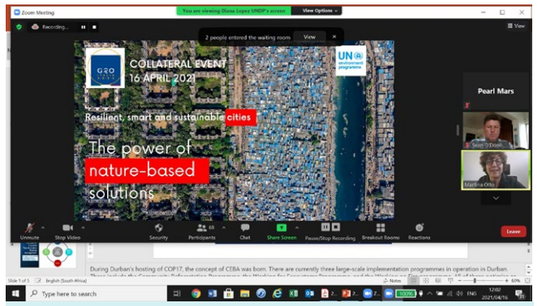
Cities are at the forefront of both the impacts of, and responses to, major environmental crises. They allow for economies of scale, delivering services to large numbers of people, driving economic growth and innovation, and creating jobs. But they also expose large, vulnerable populations to climate change, environmental hazards and latent stressors such as scarce resources. In essence, the triple crises of climate change, pollution and biodiversity loss are particularly relevant for cities and the people who live in them. Cities concentrate millions of people into locations that can be highly vulnerable to disaster and the impacts of climate change.

Nature-based Solutions (NbS) are a broad range of actions that harness the power of nature for sustainable development, that deliver for climate resilience, healthy populations, sustainable economies, green jobs and biodiversity conservation. Within cities, NbS provide multiple benefits including providing natural shading thereby reducing urban heat island effects and cooling needs, managing run-off water, improving health and well-being by reducing air pollution and offering recreational space. Around cities, NbS interventions can help with watershed management, recreational space, managing wildfires, reducing and capturing CO_2 emissions, and reducing the impact of sand and dust storms.

This aim of this United Nations Environment Programme-hosted event was to raise awareness of the potential for nature-based solutions to support resilience in cities and deliver multiple benefits for people, planet and prosperity. It focused on ways to overcome barriers to scale up NbS in cities, particularly efforts to quantify the benefits of NbS in cities and explore business models for successful deployment. It enabled the sharing of experiences amongst G20 countries in developing and deploying NbS as a way of inspiring and informing further action.

The event was convened virtually on 16th April and was split into two panel sessions, the first focusing on the multiple benefits of NbS in cities and the second on innovation and business models for scaling up NbS in cities. The event was attended by over 80 participants. Dr Sean O'Donoghue

participated in the first panel providing examples of Durban's Community Ecosystem Based Adaptation approach. UNEP have been a strong supporter of the Educational Partnerships for Innovation in Communities (EPIC) Africa network during 2021, making staff available to support African partners' efforts to establish their EPIC programmes.



This United Nations Environment Programme webinar shone a light on the value of nature-based solutions as a tool for tackling climate change adaptation.

3.1.6 British High Commission COP26 pre-event

In preparation for the 26th Conference of the Parties (COP26), to be held in Glasgow in November 2021, the British High Commission hosted the COP pre-event: Call to Action on Resilience in Cities – COP26 Cities Event in South Africa on Monday 20th September. The key objectives of the virtual workshop were:

1. Interrogate technical, financial and structural challenges for sound climate adaptation action in SA cities;
2. Call to Cities to sign up to Race to Resilience;
3. Delineate role of local government w.r.t mandate and development priorities – what and how?;
4. Identifying means of support from international community;
5. Recognising intergovernmental coordination opportunities on shared climate goals;
6. GHG and SDG Measurement/M&E – vertical integration; coordination > possibly kick-start series of future dialogues;
7. Potentially using the dialogue as a framing session for SALGA's Road to COP26 and programming Post-COP26;
8. Stakeholder scoping for future partnerships and networking opportunities.

Dr Sean O'Donoghue participated in the event within the session: Leading by Example – Resilience Case Studies, where he, along with presenters from the City of Cape Town and uMhlathuze provided examples of how these cities are tackling climate change, and addressing the key objectives list above.

3.1.7 EU-SA Knowledge Exchange on Resilience

This event, convened virtually on 15th and 17th September, focused on climate change and urban resilience. The event provided an opportunity for European and South African peers to discuss resilience matters and evaluate toolkits & solutions for South African urban resilience. The exchange focused on answering the following questions:

- What are the real barriers to urban climate adaptation collaborative partnerships?
- What can we DO to BUILD successful partnerships?
- What are the processes, mechanisms & tools which can help us achieve true resilience in South African urban areas?

The event was supported by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety of the Federal Republic of Germany. Dr Sean O'Donoghue presented the climate change work of Durban, including the Durban Climate Change Strategy, the Durban Climate Action Plan, the DAC and various Community Ecosystem based Adaptation (CEBA) projects.

3.2 National and Local Event

3.2.1 2nd National Indaba on Ecological Infrastructure

The aim of the second South African national indaba on ecological infrastructure (EI), with the theme of built and ecological infrastructure nexus in South Africa's water security agenda, was:

- To take stock of where we are, as a country, in driving water security through nurturing the nexus points between the built and ecological infrastructure.
- To reflect on the contribution of policy, research, and innovation in supporting transformative action at the nexus points between the built and ecological infrastructure.
- To unpack how various networks, partners and communities of practice are enabling positive change through more closely synergizing the built and ecological infrastructure for water security.

The indaba was hosted by the South African National Biodiversity Institute (SANBI) and was convened virtually on 3rd and 4th March. Dr Sean O'Donoghue participated in Session 6 on Day 2. The session was focused on how research and can bring the two communities of practice (built and ecological infrastructure) together through delivery of world-class outputs. This included co-creating innovations and research that allows for complementary implementation. This session looked into emerging evidence, feasible science-based solutions and innovations aimed at addressing water security at the nexus of ecological and built water infrastructure.

4. DAC Implementation 2022

Despite the ongoing challenges presented by Covid-19, and particularly the Omicron variant at the time of writing this report, the DAC Secretariat has managed to make significant progress in implementing the DAC Hub and Compact approach. The standout pieces of work during 2021 were Miji Bora, the Central KZN Climate Change Compact and the launch of the Mpumalanga Compact of Mayors, Durban's Transformative River Management Programme being taken up in other cities of Africa and EPIC Africa.

Within the DAC Secretariat, Covid-19, and particularly the economic havoc it was heaped upon Durban, has had a serious impact upon the ability of the secretariat to continue functioning. Following the moving on of the Climate Protection Scientist in the Climate Protection Branch, whose main work focus area was supporting the DAC Secretariat, the Branch was dealt a major blow. The re-prioritization of the funds that were to be used to replace said scientist has meant that it has not been possible to fill this post. As such, in the DAC Secretariat we will have to choose what parts of DAC implementation we support with our remaining capacity. The decision has been taken to continue to support city-to-city peer learning exchanges, where external funding can be found, EPIC and the TRMP, and to continue supporting the Central KZN Climate Change Compact as the secretariat.

Beyond that, it will not be possible to commit resources to the DAC, and as such, this will be the final issue of the Durban Adaptation Charter Annual Report. This will break a stretch of annual reports that started in 2013, and which forms the narrative of DAC implementation. The series of annual reports and other project documentation has been used to draft two manuscripts describing the initiation of the DAC, its implementation and the development of the DAC Hub and Compact approach through the city-to-city peer learning exchange framework. As the secretariat, we intend to submit these two manuscripts for peer-review early in 2022, so that they can contribute towards learning within Intergovernmental Panel on Climate Change reports, particularly the urban special report planned for the Seventh Assessment Report cycle.

As a secretariat, we understand the importance of the story we can tell, given the dearth of peer review literature on climate change adaptation in Africa, and the importance of driving action on the continent before it is too late. We will continue our efforts to build capacity on the continent and facilitate the uptake of innovative and contextually appropriate projects, like the TRMP, that seek to build resilience and prepare African cities for the worst impacts of climate change, while addressing other equally urgent and important challenges like biodiversity protection, ecosystem rehabilitation, job creation and poverty alleviation.

Acronyms

APAN	Asia Pacific Adaptation Network
ARC3-3	Third Assessment Report of Climate Change in Cities
C40	Cities Climate Leadership Group
CAP	Climate Action Plan
CBT	Climate Budget Training
CDP	Carbon Disclosure Project
CEBA	Community Ecosystem-based Adaptation
CFF	Cities Finance Facility
CGM	County Government of Mombasa
CKZNCCC	Central KwaZulu-Natal Climate Change Compact
CO2	Carbon Dioxide
COGTA	Cooperative Governance and Traditional Affairs
COP	Conference of the Parties
CRF	Cities Resilience Forum
DAC	Durban Adaptation Charter
DCCS	Durban Climate Change Strategy
DFFE	Department of Forestry, Fisheries and Environment
DRAP	Durban Research Action Partnership
EDTEA	Department of Economic Development, Tourism and Environmental Affairs
EPIC	Educational Partnerships for Innovation in Communities
EPIC-N	EPIC-Network
EMF	Environmental Management Framework
G20	Group of Twenty
GAN	Global Adaptation Network
GDF	Green Development Foundation
GHG	Greenhouse Gas Emissions
GIS	Geographic Information Systems
GIZ	Deutsche Gesellschaft fur Internationale Zusammenarbeit
ICMA	International Cities/ Counties Management Association
IDP	Integrated Development Plan
IPCC	Intergovernmental Panel on Climate Change
KZN	KwaZulu-Natal
M&E	Monitoring and Evaluation
MCR	Making Cities Resilient
MEC	Member of the Executive Council
MoEJ	Ministry of the Environment of Japan
MOU	Memorandum of Understanding
MTSF	Medium Term Strategic Framework
NASA	National Aeronautics and Space Administration
NbS	Nature-based Solutions
NDC	Nationally Determined Contributions
P2P	Peer to Peer
SALGA	South African Local Government Association
SANBI	South African National Biodiversity Institute
SDG	Sustainable Development Goal
SSEG	Small-scale Embedded Generators
TRMP	Transformative Riverine Management Programme
TTT	Technical Task Team
UCCRN	Urban Climate Change Research Network
UDCW	Urban Design Climate Workshop
UKZN	University of KwaZulu-Natal
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
US	United States
USA	United States of America
uWASP	uMhlathuze Water Stewardship Partnership
WIOMSA	Western Indian Ocean Marine Sciences Association
WWF	World Wild Fund for Nature

Climate Change Adaptation Branch,
Climate Change Department,
Development, Planning, Environment and Management Unit,
EThekwini Municipality.

City Engineers Complex,
166 KE Masinga Road, Durban, 4000, South Africa
Tel: +27 31 311 7920 I Fax +27 31 311 7134
Email: Kathryn.Haydvogl@durban.gov.za