

## **Regional workshop in Senegal**

**Facilitate the development, enhancement, customization and use of tools and methodologies for modelling and assessing the impacts of the implementation of response measures, including identifying and reviewing existing tools and approaches in data-poor environments**

Activity 3 of the workplan of the forum on impacts of implementation of response measures

**Informal note by the Chairs of the SBSTA and the SBI**

## **I. Introduction**

### **A. Background and mandate**

1. The SBSTA and the SBI at their fifty sixth sessions<sup>1</sup> requested the secretariat to organize a regional workshop on activity 3<sup>2</sup> of the workplan of the response measures forum before the fifty-seventh sessions of the subsidiary bodies, in collaboration with relevant organizations and stakeholders, to address regional needs and acknowledge the work that is being carried out by the Katowice Committee on Impacts.
2. In accordance with the mandate, the workshop was organized in collaboration with International Labour Organization (ILO), United Nations Development Programme (UNDP) and the Government of Senegal which has generously agreed to host the workshop.
3. In addition, the KCI has prepared a technical paper<sup>3</sup> on the activity and a database of assessment tools<sup>4</sup>.

### **B. Informal note**

4. The SBSTA Chair and the SBI Chair, with the assistance of the secretariat, has issued this informal note under their own authority. This note is informal in nature, has no status, and does not represent agreed views, ideas or text; nor is it an attempt to draw any conclusions on possible areas of convergence or divergence. It does not attempt to provide a record of all views expressed during the regional workshop or to indicate the weight of support that each of the options appeared to have.
5. This note does not attempt to synthesize the information presented by speaker. However, the views expressed by speakers and participants during the workshop are reflected in the note.

## **II. Proceedings**

6. The workshop was held 21 -23 September 2022 in Saly, Senegal.
7. Prior to the workshop, KCI members were invited to the workshop to participate and deliver presentations, Parties from the African region were invited to nominate an expert to participate in the workshop. In addition, experts were identified and invited by UNFCCC, ILO and UNDP to deliver presentations at the workshop. The following persons and organizations made interventions and delivered presentations:
  - (a) Opening remarks: Ms. Kusum Lata from UNFCCC; Mr. Moustapha Kamal Gueye, Coordinator of Green Jobs Programme, ILO; Mr. El Kebir Mdarhri Alaoui, Deputy resident representative of UNDP Senegal; Mr. Cheikh Fofana, deputy director for the Ministry of Environment and Sustainable Development of Senegal;
  - (b) Organizations: UNFCCC, ILO, UNDP, Islamic Development Bank, Climate Strategies and Center of Climate Strategies, European Roundtable on Climate Change and Sustainable Transition (ERCST);
  - (c) KCI members: Catherine Goldberg, USA and Wael Keshk, Egypt;
  - (d) Parties: Senegal, Kenya and the US.

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<sup>1</sup> Para. 75, FCCC/SBSTA/2022/6 and para. 130, FCCC/SBI/2022/10

<sup>2</sup> Facilitate the development, enhancement, customization and use of tools and methodologies for modelling and assessing the impacts of the implementation of response measures, including identifying and reviewing existing tools and approaches in data-poor environments, in consultation with technical experts, practitioners and other relevant stakeholders.

<sup>3</sup> Available on <https://unfccc.int/documents/614632>

<sup>4</sup> Available on <https://unfccc.int/documents/274695>

2. In the opening of the workshop, the UNFCCC secretariat outlined the background of the workshop, ILO and UNDP provided relevance of their work to the response measures, and the host country added the dimension of the national and regional circumstances to the importance of the workshop.
3. At the scene-setting session, the representative of the host country highlighted the importance of energy transition and the needs to assess the impacts of response measures from the perspective of Africa and Least Developing countries (LDCs).
4. The programme of the 3-day workshop is as follows:
  - (a) Day one: Introduction to the impacts of response measures, tools, methodologies and process of undertaking assessment of impacts of response measures, accompanied by a hands-on exercise using an input-output modelling tool on green jobs.
  - (b) Day two: modelling based case studies at regional level and country level, accompanied by a hands-on group exercise using a CGE model; capacity building and financial support programmes available to countries to undertake assessment.
  - (c) Day three: sharing of country-specific case studies on assessment of impacts of response measures using modelling tools, accompanied by a group exercise.
5. Around 60 participants, including KCI members, experts and representatives of Parties from the region attended the workshop in-person. Some speakers made their presentations in virtual format. All presentations have been made available on the webpage of the workshop<sup>5</sup>.
6. At the closing, the participants provided their feedback on the workshop. UNFCCC, ILO and UNDP expressed their appreciation to the speakers for making important contribution to the workshop with their presentations and expressed its appreciation to the participants for their interactive engagement and for contributing to the open exchange of views. It extended its gratitude to the government of Senegal for hosting the workshop.

## **II. Summary of discussions**

### **A. Scene-setting: the importance of just energy transition and the assessment on the impacts of the response measures from the perspective of Africa and LDCs**

7. The representative of the Senegal made a scene-setting presentation from the perspective of Africa and LDCs. The representative noted that Africa and LDCs were least responsible for climate change, but suffering the most from its impacts, including the impacts resulted from the implementation of response measures. About 43% of population lacks access to electricity and three quarters of the total population lack of access to clean cooking facilities. Moreover, the pandemic has undermined the progress towards access to electricity and clean cooking. The representative also highlighted the special circumstances faced by Africa, e.g. low level of industrialization and dependence on the import of technologies, while it hosts vast reserve of fossil fuels and most key minerals in the world.
8. Looking at the NDCs submitted by African countries, only limited number of NDCs provided information on the impacts of implementation of response measures, among which few NDCs have undertaken assessment using quantitative methods. Furthermore, no assessment on cross-border impacts could be found. All these findings indicated that most of countries in Africa did not have knowledge on tools and models to carry out such assessment.
9. The representative underlined the need to mainstream the assessment on the impacts of response measures in the NDCs implementation plan. The representative also highlighted that assessing the impacts required strengthening and expanding national capacities and institutions, enabling accurate data collection and developing country specific tools and

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<sup>5</sup> [https://unfccc.int/event/RM\\_regional\\_workshop\\_Senegal\\_2022](https://unfccc.int/event/RM_regional_workshop_Senegal_2022)

methodologies. For Africa and LDCs, these will not be possible without substantive and long-term support.

10. With regards to the just energy transition, the representative noted that the energy transition in Africa was primarily about providing affordable and reliable energy for African people and closing the gap of energy poverty. To ensure a just transition for all, it is critical that the policy-making process is informed by modelling-based analysis and assessment on the socio-economic impacts of the transition, taking into account people in vulnerable situations.

11. The secretariat provided a comprehensive introduction on the concept of response measures, the type of impacts resulted from the implementation of response measures and the assessment approaches. It also provided an update on the UNFCCC negotiation process, including provisions concerning response measures under the Convention and under the Paris Agreement, the evolution of the workstream over time and future work under the Paris Agreement.

12. A participant called for the KCI to look at linked issues in the UNFCCC process (e.g. new collective quantified goal) and to help developing countries to build capacity and to address their concerns on data shortage. A participant emphasized the importance of international collaboration with international agencies to address these concerns. Another participant underlined the importance of including response measures in the UNFCCC reporting process.

13. A participant queried what energy could provide African countries reliable and consistent baseload electricity. The Senegalese representative was of the view that the determination of the baseload electricity would be dependent on a good assessment on the availability of energy resources and technologies, including bridging solutions such as natural gas, while other renewable energy resources could be integrated into the mix of energy sources.

## **B. Introduction to the impacts of the implementation of response measures and the use of tools and methodologies for assessment**

14. The KCI member, Mr. Wael Keshk, presented climate change policies and potential social, economic and environmental impacts, based on the KCI's technical paper on the workplan activity 4.

15. Ms. Catherine Goldberg in her capacity as the KCI co-chair, presented KCI's technical paper on tools and methodologies which provided an overview on the available qualitative and quantitative tools and methodologies that can be used for the assessment.

16. Dr. Lindsay Shutes, demonstrated a database of tools and methodologies, developed by the KCI, that can be used for selection of a tool to assess the impacts of response measures based on specific conditions of the study to be undertaken.

17. The discussion during this session centred around:

(a) Whether the assessment tools and methodologies introduced by the KCI's technical papers were applicable for adaptation actions;

(b) The linkage with transparency reporting process, including the timing of reporting the assessment on the impacts of the implementation of response measures in the BTR and the urgent need to take actions on building the national capacity and MRV system in this aspect;

(c) The importance of data collection for the assessments; and

(d) The option for qualitative assessments which does not require as much data as quantitative assessment does.

## B. Case studies

18. The sessions on case studies aimed at demonstrating the assessment on the impacts of the implementation of response measures undertaken at regional or country level.

19. The case studies covered the following countries and region:

(a) Africa: The case study presented the findings of a global analysis of the impact of the implementation of climate change mitigation policies and actions (response measures) using a global Computable General Equilibrium (CGE) modelling tool. Four policy instruments were used to achieve a 20% reduction in global CO<sub>2</sub> emissions, including increasing the costs of production using fossil fuels in high-income and middle-income countries via a carbon tax. Market mechanisms distribute the emission reductions across regions which leads to changes in trade prices and exchange rates. The results demonstrated that the implementation of response measures has different impacts on different regions, including Africa, depending on the structure of the economic system and the trade patterns that link regions. The impacts of response measures were shown to vary widely across regions, which highlighted the importance of understanding the broader implications when formulating mitigation policies and actions.

(b) Senegal and Kenya: The global climate mitigation policies affected the price and quantity with which goods are traded on global markets, which in turn affects the economies of trading countries, including those exempted from the policies. The impact of changes in the pattern of world trade arising from three global climate response measures from the global study was considered for Senegal and Kenya. The study used country CGE models run for Senegal and Kenya which included detailed representations of the two economies to allow for detailed analysis of country level impacts. The impacts of the implementation of response measures on progress towards Sustainable Development Goals (SDGs) 8, 9, and 10 were considered, as well as broader economic impact. The findings highlighted the importance of identifying the possible wider impacts of response measures on countries outside of those taking the direct action. Additionally, the tools presented in this session may also be used to examine the impacts of domestic response measures including NDCs.

(c) Ghana: the case study jointly carried out by Environmental Protection Agency of Ghana and ERCST assessed the cross-border impacts from the implementation of climate change mitigation policies on Ghana. The assessment identified 12 sectors of the Ghanaian economy that were most vulnerable to the impacts of response measures and chose three international response measure for quantitative assessment (carbon tax for international shipping, carbon tax for international aviation and the EU Border Carbon Adjustment Mechanism). The results indicated that the overall effects of the carbon tax for international shipping on Ghana's economy. The macroeconomic impacts of the EU CBAM were too small to be meaningful, but they could reshuffle export destination patterns in Ghana. The step-wise methodology used in the case study could be easily replicated to undertake the assessment in other countries, taking into account the socio-economic context and the information availability and customisation of the model for the country.

(d) Kenya: The assessment on the impacts of response measures in Kenya's updated NDCs were carried out at qualitative level mainly through stakeholder consultations with sector experts, and the possible impacts identified were framed from views and experience from the experts. In agriculture and LULUCF sector, the potential negative impacts could be transformed into positive outcomes if adequate support (e.g. financial, governance and capacity building) could be provided to communities, with leverage to apply their own safeguards and equity frameworks that specifically address context specific issues and equity concerns. In energy sector, the impacts identified mainly included opportunity cost and sunk cost related to transition from fossil fuels to renewable energies, such as abandoning ongoing oil exploration and infrastructure for setting up the petroleum and coal industries, job losses in the coal plants and oil exploration sites.

20. The discussion during this session centred around:

- (a) The cost-effectiveness of using modelling approach in developing countries and the engagement of local experts and practitioners with necessary capacity building when the case studies were carried out;
- (b) The robustness of the data in context of data-poor countries and the measures used to address data shortage;
- (c) The cross-border impacts of response measures due to change in trade patterns.
- (d) The definition of vulnerable households in the modeling exercise;
- (e) The possible next steps after the pilot project;
- (f) The new evolvement of climate policy in the host country after the case study (e.g. the introduction of domestic carbon tax) and related impacts on its competitiveness;
- (g) How to deal with the issue of international trade, which is the main channel for transmitting the impacts of response measures, while being perceived as an issue outside the UNFCCC negotiation process; and
- (h) The importance of filling the gap between the findings of academic research and the messages conveyed to the audience at a political level.

### **C. Hands-on exercises on modelling tools**

21. Three sessions on hands-on exercise were organized during the workshop. These sessions offered the first-hand opportunities for participants to analyse policy issues using modelling tools.

22. In the first session, ILO Senegal and its partners from University of Dakar and University of Abidjan introduced the ILO green jobs assessment model (GJAM). The model is based on input-output table and is designed to address the policy questions around the impacts of climate policies on labour market, economy (e.g. sector GDP, poverty, tax, income, wages) and environmental related factors (e.g. CO<sub>2</sub> emissions by sector, forestry, waste, water). In addition to economic statistics, the model also allows to integrate environmental and social statistics. The model allows the simulation of structure change in the economy.

23. Participants were shared with an excel-based Input-Output table and were requested to use the model to assess impacts on jobs by introducing organic agriculture and clean energy manufacturing in the economy. A training guidebook<sup>6</sup> was shared among participants during the hands-on exercise.

24. In the second session, Participants were introduced to a user-friendly modeling interface (the Interface), which was designed to simplify the use of CGE model to run different scenarios and to avoid complexity and extensive training. The Interface is based on single country economy-wide computable general equilibrium model (CGE model) and 2014 social account matrix for Senegal, including 23 products & sectors, 19 factors and 10 household groups. It allows the participants to run the policy shock for scenarios by moving “levers” (e.g. export/import price, exchange rate, borrowing, income tax) to transmit the impacts to the economy and to analyse the results of a climate related policy scenario.

25. The group exercise was set in a scenario that a carbon tax is introduced to reduce total CO<sub>2</sub> emissions by 20% and it is expected that the action, taken by participating countries, will have impacts in non-participating countries via changes in global trade. Participants were divided into eight groups and each group was requested to reasoning the choice of its levers and the respective focus of the modeling results assigned to each group. Each group was equipped with a laptop on which the modelling programme (namely GAMS-MIRO) was installed for the group to use.

26. The experts invited feedback from participants after their group exercise. Participants appreciated the opportunities to get the hands-on experience in getting to know how an

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<sup>6</sup> Available on <https://unfccc.int/documents/615355>

economic model works and recognized the value of the Interface to their work. Moreover, Participants expressed their willingness to see more elements added to the Interface, such as the impacts on GHG reductions in addition to economic parameters, option to plan the counter policies to mitigate the adverse impacts with a view of effective policy planning, more country-specific and sector-specific features to meet their needs, the dimension of impacts on GHG emissions for a full picture in the long term, and some narratives on the modelling results to facilitate policy making.

27. In the last session, the participants, in three different groups, were given different NDC scenarios and discussed tools and methods that could be used to assess the impacts of the NDCs, policies that could contribute to a just transition, and actors who need to be involved in the design and implementation of the NDCs. Each group brainstormed different scenarios. The first group discussed NDC scenario of a SIDS with 20 per cent GHG reduction by 2030 with focus in energy, electricity and transport. The second group discussed NDC scenario of a middle-income country with 30 per cent GHG reduction by 2030 with focus in energy, agriculture, forestry and land use. The third group discussed NDC scenario of a low middle-income country with 35 per cent GHG reduction by 2030 with focus in electricity, energy efficiency in building and appliances and waste management. Each group was also given key national policies that are relevant for the focus. At the end of the session, each group shared its discussion with the other groups.

#### **D. Support for assessment**

28. The session on support for assessment aimed at discussing what support and cooperation available to assist countries in their assessments.

29. Six presentations were made during this session:

(a) Ms. Mame Bousso from UNDP presented UNDP's Climate Promise. Ms. Bousso explained that Climate Promise was a support to countries on NDCs as contribution to the NFC Partnership and the areas of support include qualitative and quantitative assessments, stakeholder engagement, national capacity building, policy engagement, and analytics and knowledge generation/dissemination;

(b) Ms. Seynabou Diouf from ILO presented support for Green Jobs Assessment in the African region. Ms. Diouf shared the ILO's Green Jobs Assessment Institution Network, which is a quantitative analysis consisting of a set of tools developed by the ILO to help identify key opportunities for a just transition. She also shared support initiatives that the ILO provides, including Partnership for Action on Green Economy (PAGE) which supports nations and regions in reframing economic policies and practices around sustainability, Climate Action for Jobs Initiative and Global Accelerator with main goals of enabling climate action with decent jobs and social justice and supporting countries for a just transition, Development cooperation, and Training and capacity building;

(c) Ms. Catherine Goldberg from the government of the US presented three examples that the US assistance is helping countries implementing their NDCs, promote just transition and support workers in transition to green economies. The NDC partnership provides developing countries with efficient access to a wide range of resources to adapt to and mitigate climate change and foster more equitable and sustainable development; the Power Africa is a USAID funded project working on securing electricity throughout sub-Saharan Africa, with a focus on renewables; and the Just Energy Transition Partnership (JETP) provided a platform for the host country and the donors of climate finance to achieve an ambitious and just energy transition. The initiative in Africa focuses on phasing out of coal power, including the policy of restructuring Eskom, the South Africa owned electric company.

(d) Mr. Olatunji Yusuf from Islamic Development Bank presented the support provided by Islamic Development Bank to African countries on managing the impacts of climate actions and just transition. The presentation highlighted the Banks' collaboration with a crowdfunding platform (TRINE) to support African countries on solar home system through crowdfunding finance mechanism.

(e) Ms. Nicole Kempis from Climate Strategies presented South-to-South Cooperation on Just Transitions. The initiative has been in existence since 2018 and aims at advancing national just transition agenda in each of the partner countries, developing just transition guidelines specific to the Global South, building a south-south knowledge sharing network, and building awareness among finance providers on just transition. Ms. Kempis also presented the work of the its partners in Ghana, Kenya and Malawi;

(f) Mr Tom Peterson and Mr. Ariana Ugliano from the Center for Climate Strategies presented a USAID funded project on using modelling tools and methodologies to inform the Net Zero Plan in Rwanda's electricity sector.

30. The discussion during this session centred around:

(a) Financial support in terms of the importance of providing the financial support for LDCs, not only in energy sector, but also in other areas, including adaptation; the importance to give attention to the special circumstances of Africa in terms of access to financial support; and the predictability of future finance commitment from developed countries.

(b) Technical support available for more concrete case studies based on modeling tools and the need to have a common assessment at country, sub-regional and regional level and sub-regional level in a coordinated and holistic manner.

(c) Challenges and lessons learn from the JETP process which could inform other countries which are of interest to join the initiative.

(d) The importance of identifying the needs of African countries in terms of providing support for the assessment.

## **E. Feedback from participants**

31. According to the Mentimeter-based feedback session,<sup>7</sup> the majority of participants thought the workshop met their expectations very well and they were very likely to use the knowledge and skills gained from the workshop in their future work. In addition, participants provided specific feedback on the workshop:

(a) The duration of the workshop could be extended by several additional days.

(b) The regional workshop could be divided into sub-regional ones, taking into account the variety of circumstances in African region and the different impacts resulting from the implementation of response measures.

(c) Recognizing the value of hands-on sessions on modelling tools, many participants expressed a strong willingness for more time allocated to modelling work;

(d) The workshop should be held on a regular basis rather than waiting for mandates from the COP and the SBs, given that modeling exercises are a day-to-day task;

(e) UNFCCC regional collaboration centers could facilitate the organization of such workshops.

(f) It is important to increase youth participation in the workshop to improve their modeling skills.

(g) The data shortage in developing countries is one of the key challenges repeatedly raised by participants. The UNFCCC could collaborate with other international agencies to mobilize resources to assist developing countries in addressing the issue.

(h) Since simultaneous interpretation was only available on the first day of the workshop, some participants struggled to fully understand the information conveyed by speakers on the following two days.

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<sup>7</sup> The Mentimeter presentation is available on <https://unfccc.int/documents/615354>