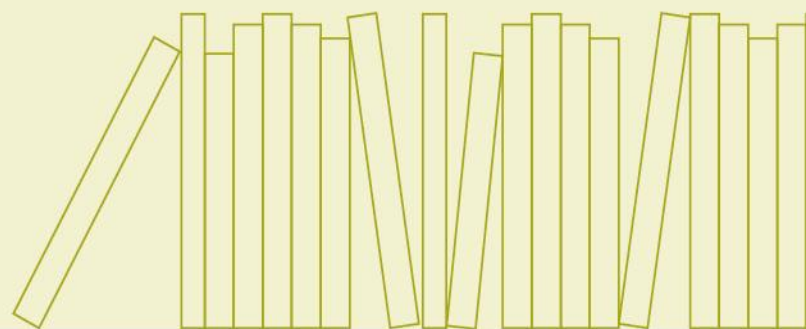


Economic Commission for Latin America and the Caribbean

**ECLAC SUBREGIONAL HEADQUARTERS
FOR THE CARIBBEAN**



Evaluation report of the training workshop: an introduction to computable general equilibrium modelling



UNITED NATIONS

ECLAC



UNITED NATIONS



Economic Commission for Latin America and the Caribbean
Subregional Headquarters for the Caribbean

Training workshop: an introduction to computable
general equilibrium modelling
8–9 December 2022
Belmopan, Belize

LIMITED
LC/CAR/2023/5
11 January 2023
ORIGINAL: ENGLISH

**EVALUATION REPORT OF THE TRAINING WORKSHOP:
AN INTRODUCTION TO COMPUTABLE
GENERAL EQUILIBRIUM MODELLING**

This report has been reproduced without formal editing.

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A. INTRODUCTION

1. An introduction to computable general equilibrium (CGE) modelling is a two-part workshop designed to introduce the fundamental concepts, practices, and implementations of CGE.
2. The presentations explained the standard economic theory for general equilibrium, provided examples of CGE applications to international trade policy, and reviewed basic CGE model examples. During the course, participants were introduced to the major CGE modelling software, General Algebraic Modeling System/Mathematical Programming System for General Equilibrium (GAMS/MPSGE). Several small examples, or maquettes were used as exercises in order to provide hands-on experience with CGE modelling for the participants.
3. Near the end of the workshop, more sophisticated theories and models were presented. Popular trade models and large modelling data sets were provided for exploration, including the Global Trade Analysis Project (GTAP) data set. Participants also received a temporary GAMS/MPSGE license during the course.

B. ATTENDANCE

1. Place and date of the workshop

4. The training workshop “An introduction to computable general equilibrium modelling” was held from 8 to 9 December 2022 in Belmopan, Belize.

2. Attendance

5. Workshop participants originated from Belize, Suriname and Guyana. The training targeted 15 professionals primarily from the Directorate General for Foreign Trade in Belize, the Belize Chamber of Commerce and Industry, the Statistical Institute of Belize, the Belize Customs and Excise Department and the Belize Economic and Development Council.
6. The workshop was facilitated by Dillon Alleyne, Deputy Director, ECLAC subregional headquarters for the Caribbean, Sheldon McLean, Coordinator, Economic Development Unit of the same office, and Miles Light consultant and facilitator.

C. SUMMARY OF EVALUATION

7. An evaluation questionnaire was administered to participants in the final session of the workshop. The purpose of the evaluation was to elicit feedback on the substantive content and usefulness of the workshop, organization of the event and other works by ECLAC. This section of the report presents a summary of the evaluation responses provided by the workshop participants. Reference to the term respondent throughout this document represents workshop participants that completed and submitted the questionnaire.

1. Identification

8. Of the twenty persons participating in the workshop, fourteen completed and submitted the evaluation questionnaire. Six (43%) of the fourteen respondents were female (figure 1). With respect to the age distribution, 29% of respondents were 30 years and under, 43% were between the ages of 31 and 40 years, 14% were between the ages of 41 and 50 years and 14% were 50 years and over (see figure 2). The full list of participants is included in annex I.

Figure 1
Sex

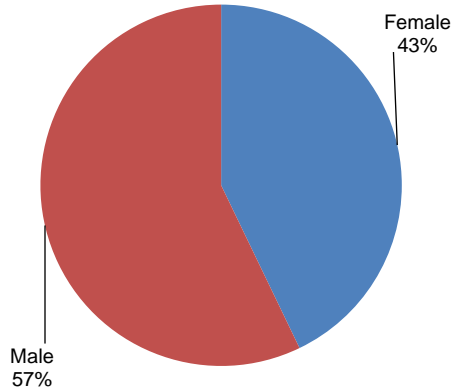
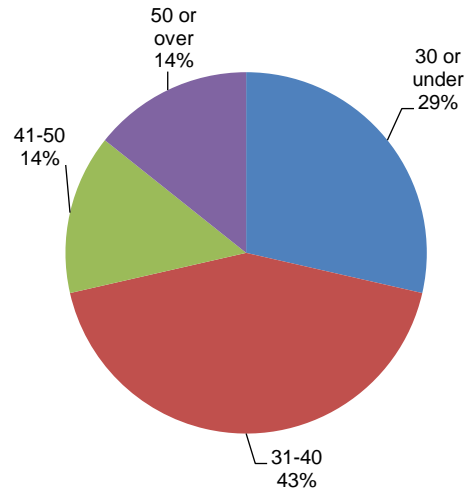


Figure 2
Age group distribution



Source: ECLAC, based on questionnaire results.

9. Belize had the highest participation rate with 79% and 77% of respondents reporting that they originated from this country and were currently employed there respectively (figures 3 and 4). For the remaining respondents, 14% and 7% reported that they originated from Suriname and Guyana respectively. Fifteen per cent of respondents were currently employed in Suriname and 8% were employed in Guyana.

Figure 3
Country of origin

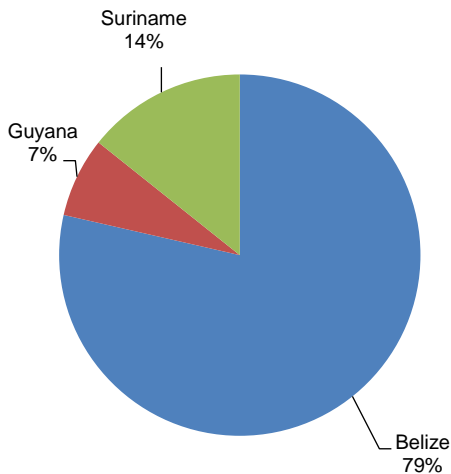
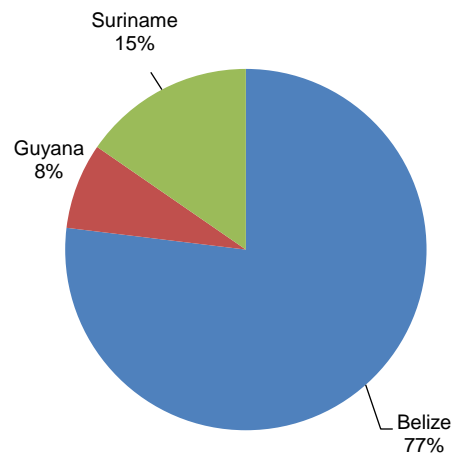


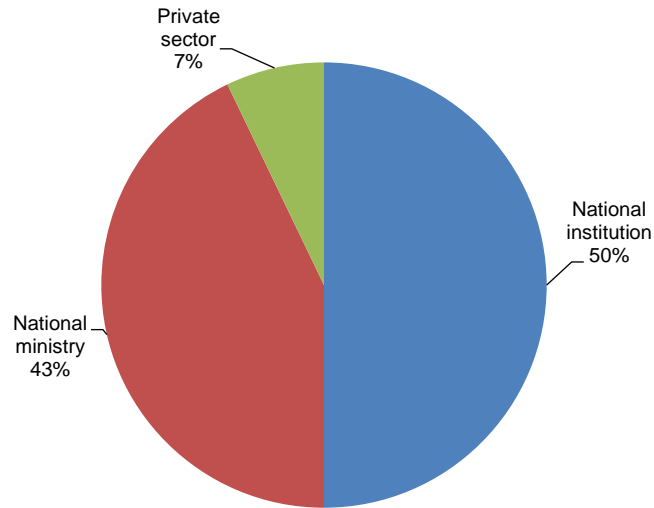
Figure 4
Country of current employment



Source: ECLAC, based on questionnaire results.

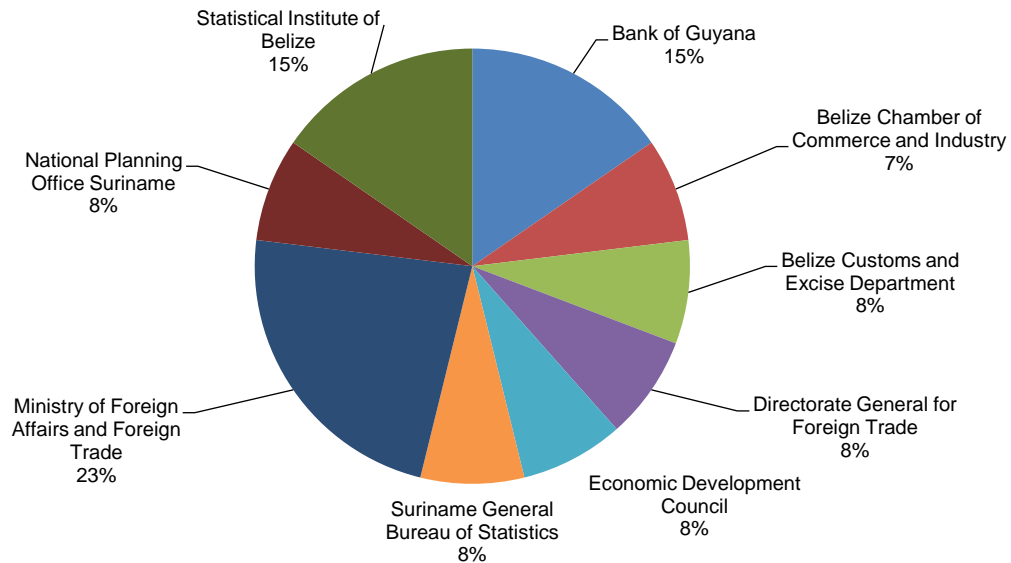
10. Most of the respondents indicated that they represented public institutions, with 50% representing national institutions and 43% representing national ministries. One respondent (or 7%) indicated that they represented the private sector (see figure 5). The different institutions are depicted in figure 6.

Figure 5
Type of organization represented



Source: ECLAC, based on questionnaire results.

Figure 6
Institutions represented at the workshop



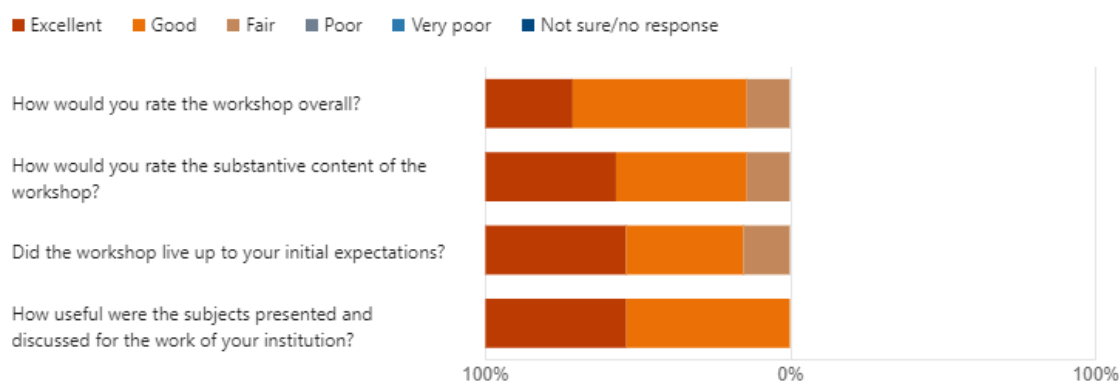
Source: ECLAC, based on questionnaire results.

11. Respondents at participating institutions reported a diverse number of titles/positions ranging from junior level professionals to senior level management. Altogether, the most common roles were Economist (43%), senior management (14%), Statistician (14%), and Director of Foreign Trade (11%). The four other respondents made up the other positions: policy analyst, project coordinator, assistant manager and assistant comptroller.

2. Substantive content and usefulness of the workshop

12. Respondents rated the overall workshop as either excellent (29%), good (57%), or fair (14%) – see figure 7. Most respondents (89%) rated the substantive content of the workshop as either excellent (43%) or good (43%), while 14% responded fair. Most respondents (89%) indicated that the workshop lived up to their initial expectations, responding with either excellent (46%) or good (39%), while 15% responded fair. All rated the subjects presented as useful to the work of their institution, with 46% responding excellent and 54% responding good.

Figure 7
Rating the content of the workshop



Source: ECLAC, based on questionnaire results.

13. The respondents presented some recommendations to strengthen the topics addressed. Table 1 outlines these recommendations.

Table 1
Subject recommendations to improve the workshop

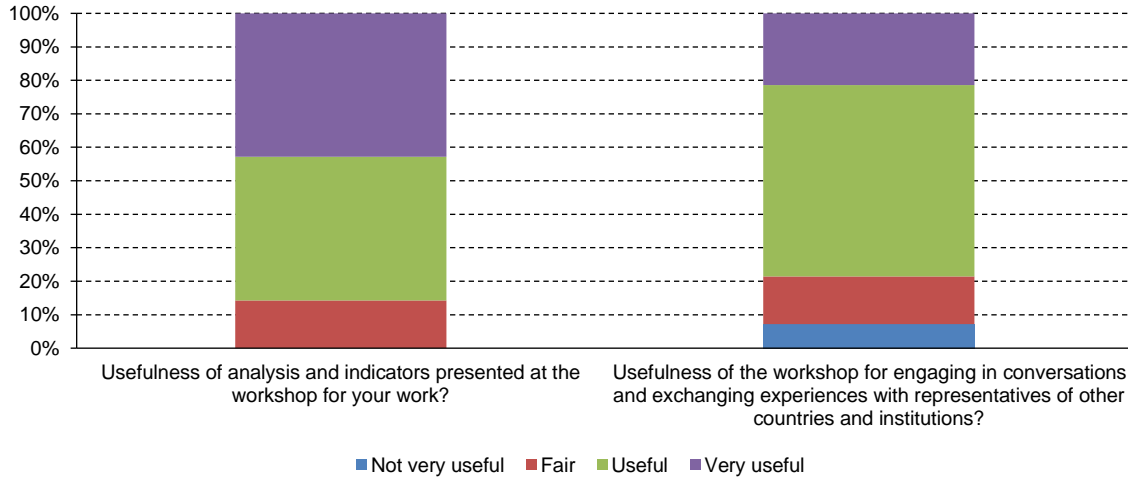
Recommendations	
1	A more in-depth look at the competitive advantages of countries and constraints to being competitive
2	I believe it addressed all of my concerns
3	More time dedicated on the use of the software and syntaxing
4	More time really needed
5	More time to do more practical cases and use of the program. Programming and setting parameters specifically are areas most helpful.
6	The objectives were addressed but I would think that more time needs to be dedicated to a program and subject matter like this.
7	The training would be more impactful if we went deeper into modelling and have more time for practical experience and to explore more with the programme.
8	The workshop would have benefitted from more time to allow participants to be more hands-on with the software and its application.
9	These kind of model trainings should be more interactive...learning by doing.
10	Three to four days instead of two days
11	Training in actual use of the tool

Source: ECLAC, based on questionnaire results.

14. Generally, respondents thought that the workshop would benefit from being longer to allow participants more time for training. They also thought it would have benefitted from more hand-on use of the CGE tool.

15. With respect to the usefulness of the analysis and indicators presented at the workshop for their work, most respondents indicated that they were very useful (43%) or useful (43%) for this purpose (figure 8). The remaining respondents reported them as fair (14%). Regarding the use of the workshop for engaging in conversation and exchanging experiences, most respondents found it useful with 21% finding it very useful and 57% finding it useful. On the other hand, 14% responded fair and 7% responded not very useful (see figure 8).

Figure 8
Usefulness of subjects presented, analysis and indicators for work,
and usefulness of workshop for engaging and sharing experiences



Source: ECLAC, based on questionnaire results.

16. Overall, respondents were keen on incorporating several aspects of the training. The responses are listed in the table below.

Table 2
Aspects of the training considered for incorporating into respondents' work

Responses	
1	All
2	Being able to use the program to conduct modelling cases to determine effects
3	Certain aspect of it can work
4	CGE model
5	Data analysis using GAMS
6	Most of our work includes design and implementation of development projects for reform across key sectors. The tool is relevant in supporting with data driven analysis to better understand what sectors to support to create the enabling environment for improved efficiencies and increased foreign direct investment.
7	The actual use of the tool but I would have to master it first
8	The econometric modelling
9	Use the model to evaluate the impact of decisions on welfare
10	Using the GDP indicators and supply and use table (SUT) for models
11	Utilizing of MPSG in the estimation of curvatures in the production function when taking the supply and use table to an input-output table.
12	We plan on utilizing more general equilibrium analysis and New Trade Theory in our trade agenda.

Source: ECLAC, based on questionnaire results.

17. Table 3 outlines the learning experiences from the workshop that would be beneficial for each respondent's country's needs.

Table 3
Especially important learning experiences

Responses	
1	General equilibrium analysis and New Trade Theory
2	It will be very useful as it provides a foundation for understanding the derivatives leading to the outcome of the study and our ability to further analyse these outcomes.
3	Model-based training
4	MPSG modelling
5	Running the model and interpreting the values using local examples
6	Taxation and elasticity of substitution for goods
7	The concepts along with examples presented were a refresher and offered a deeper understanding of the level of optimization that the tool can provide.
8	The fact that the tool is available
9	Trade effects of liberalization
10	Will be useful to provide deeper insight into CGE model analysis

Source: ECLAC, based on questionnaire results.

18. When asked about the most significant outcome of the workshop the respondents offered the following responses.

Table 4
Most significant outcome of the workshop

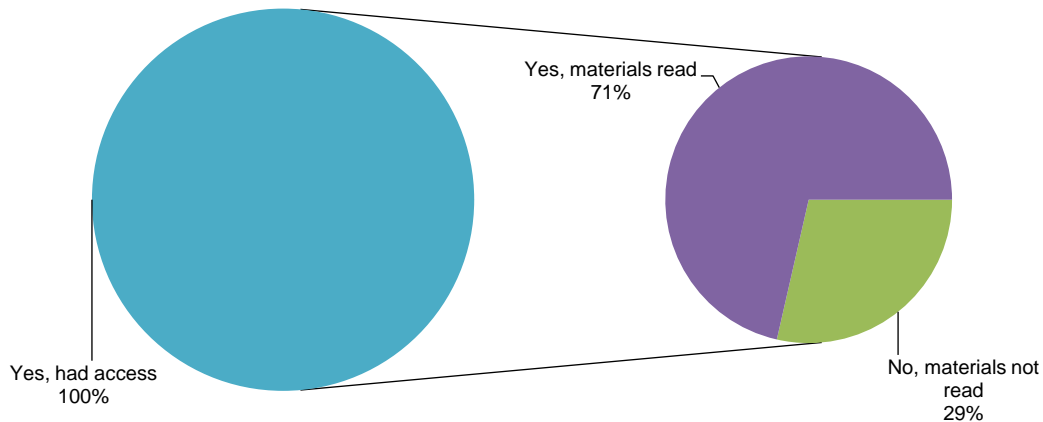
Responses	
1	Data interpretation
2	GAMS introduction
3	Greater awareness of modern trade policy direction in comparison with current approaches
4	Having access to a tool that empowers you for data driven decision-making is much needed in Belize. We were giggling throughout our side convos in class about politicians/policymakers designing and approving policies based on feelings and instinct – a very sad state.
5	How to be careful about policy and its challenges
6	Knowledge of the different possibilities to calculate policy decisions on the economy
7	Learn of use new model software
8	The importance of numbers in making decisions
9	The skills learned
10	Understanding the CGE
11	Understanding the composition of the CGE training

Source: ECLAC, based on questionnaire results.

3. Organization of the event

19. Fourteen (100%) of respondents had access to the materials for the workshop prior to seeing the presentations at this event. Ten (71%) of them read the materials beforehand while four (29%) did not.

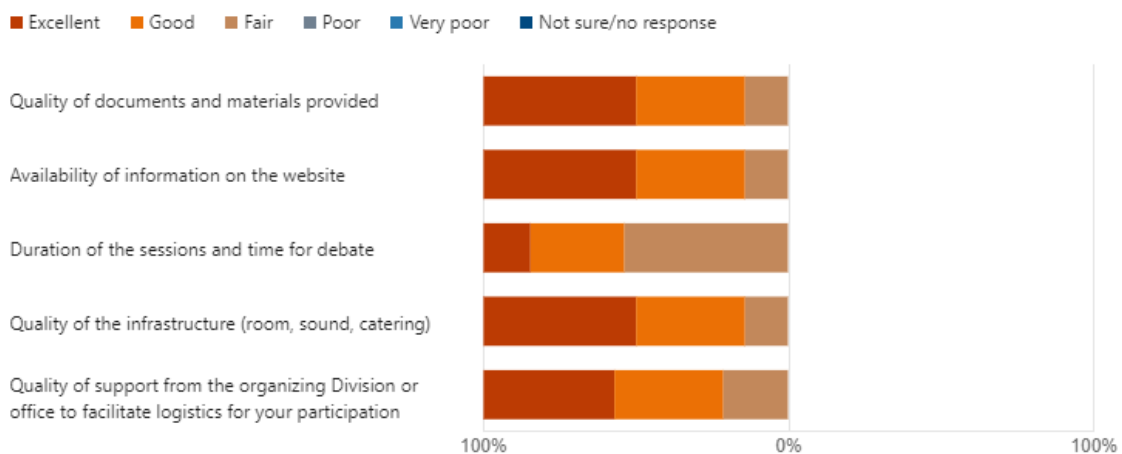
Figure 9
Access to materials prior to the workshop and whether materials were read



Source: ECLAC, based on questionnaire results.

20. In general, respondents appeared to be mostly satisfied with the organization of the event except for the duration of the session and the time for debate (figure 10). A majority rated the following characteristics of the training as excellent or good: quality of documents and materials – 86%; availability of information on the website – 86%; quality of the infrastructure – 86%; quality of support from the organizing office – 79%. For the duration of the sessions, a majority of respondents rated it fair (54%), while 46% rated it excellent or good. No respondents rated any of the characteristics as poor or very poor.

Figure 10
Ratings for organization of the event



Source: ECLAC, based on questionnaire results.

21. In general, with respect to what worked well and what could be improved about the workshop, as well as the general comments on the organization of the workshop, the respondents appreciated the information presented in the workshop but would have appreciated more time and country specific information. One respondent expressed appreciation for the hybrid nature of the workshop, but another felt that it would have been better in person (tables 5 and 6).

Table 5
Responses on what worked well and what could be improved

Responses	
1	Having access to the material prior to our sessions was much appreciated. The room setting and the acoustics enhanced presentation delivery. The catering was excellent.
2	It all worked well enough in my opinion.
3	It worked well
4	Length of time dedicated to the workshop
5	Text was a bit small to read
6	The constraint of time was a major factor. I believe more time would have been necessary to go through what was covered in a shorter time.
7	The documents were informative. Challenges in loading software with license.
8	The email communication was excellent and the also had in-person phone calls.
9	The interaction
10	The length of the workshop limits the effectiveness.
11	The sessions went well. More preparatory work before the training starts.
12	The workshop was well organized with materials reaching participants well in advance. The lecturer was extremely knowledgeable and able to provide comprehensive responses to questions from participants. The duration of the workshop could have been longer as the comprehensive nature of the topics required more time for deeper involvement of participants.

Source: ECLAC, based on questionnaire results.

Table 6
Comments and suggestions on organizational aspects of the workshop

Responses	
1	Excellent training. Wished we had more time to prepare.
2	I always applaud the use of a hybrid approach to meetings/workshops. I appreciated the opportunity to share with colleagues from Suriname and Guyana and to learn from them through their interventions.
3	I understand the need of these meetings, but virtual meetings regarding model building is not practical...
4	More country specific would be great for models
5	More time is required for this in-depth syntaxing software presentations

Source: ECLAC, based on questionnaire results.

Note: Responses with “no” or “none” are excluded.

22. With respect to the areas identified as follow-up activities ECLAC could undertake to support participant countries and/or institutions (table 7), respondents thought that ECLAC could provide a follow-up training with more in-depth and practical examples. One respondent wished for a face-to-face training.

Table 7
Follow-up activities on topics covered in the workshop

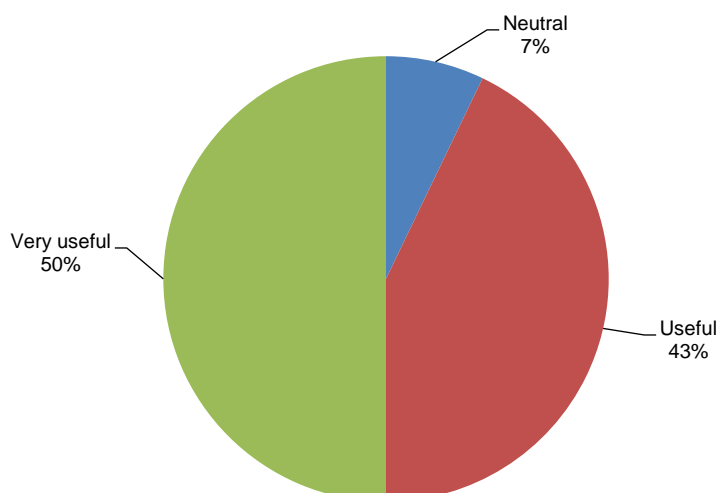
Responses	
1	A better understanding of the CGE model application
2	A phase II to this with more practical experience
3	Converting a SUT to an IOT
4	Effects of trade in services liberalization
5	Face to face training, where I can practise immediately
6	More workshops like this one
7	None
8	Sharing of the sessions after the presentation is finished
9	Training to effectively use the software

Source: ECLAC, based on questionnaire results.

4. Other works by ECLAC

23. There was strong agreement among respondents regarding the usefulness of the analysis and indicators provided by ECLAC for formulating and implementing of trade policy in their country. Ninety-three per cent of respondents reported that using ECLAC's analysis and indicators for this purpose was either useful (43%) or very useful (50%) – see figure 11.

Figure 11
Usefulness of analysis and indicators for formulation and implementation of trade policy in your country



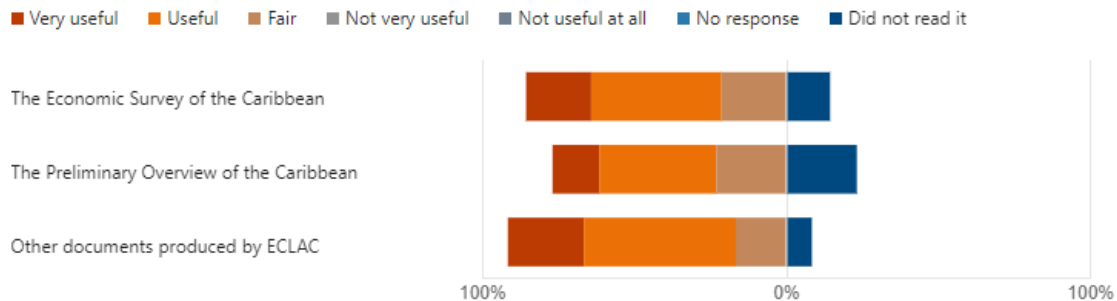
Source: ECLAC, based on questionnaire results.

24. Regarding suggestions for other technical cooperation activities that ECLAC could undertake, respondents suggested extended training in CGE models, modelling and negotiation training for trade in services, and training in supply and use tables.

25. When asked about two specific ECLAC recurrent publications, the Economic Survey of the Caribbean and the Preliminary Overview of the Economies of the Caribbean respondents mostly found them useful (see figure 12). Sixty-four per cent found the Economic Survey of the Caribbean very useful or useful,

while 54% found the Preliminary Overview of the Economies of the Caribbean useful or very useful. However, some respondents responded that they did not read either publication: 14% and 23% respectively. Seventy-five per cent of respondents rated other documents produced by ECLAC as very useful or useful, while 17% rated them as fair. The other ECLAC documents that the respondents mentioned was the ECLAC Regional Outlook.

Figure 12
Usefulness of ECLAC publications



Source: ECLAC, based on questionnaire results.

26. Ninety-three per cent of respondents expressed an interest in receiving information on activities and publications by ECLAC in the area covered by the workshop. The email addresses of these respondents can be identified in annex I.

D. CONCLUSIONS

27. Overall, the Introduction to CGE Modelling workshop was a benefit to participants. Participants were exposed to useful analytical tools for conducting computable general equilibrium modelling, which had the potential to positively impact the formulation of public policy. More importantly, participants generally viewed the analysis and indicators presented as an asset to the work of their institutions. Institutions that now have the potential to benefit from these skills include ministries of trade, foreign affairs, central banks and private sector associations.

28. Participants were generally satisfied with the organization of the event but highlighted the need for more time with the material. Many participants also expressed an interest in follow-up workshops to deepen their understanding of the material introduced at the workshop.

29. There was a majority of participants indicating exposure to ECLAC publications and documents and most of those that had the opportunity to review ECLAC flagship publications and other documents all found them to be at least useful. By conducting the workshop, ECLAC now has an opportunity to expand their readership base given that most participants expressed an interest in acquiring future publication related to the topics presented at the workshop.

Annex I**LIST OF PARTICIPANTS****BELIZE**

- Dyon Elliott, Chief Policy Analyst, Belize Chamber of Commerce and Industry, email: analyst@belize.org
- Doyle Flowers, Assistant Comptroller, Belize Customs and Excise Department, email: officer1passengerbzpi@customs.gov.bz
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- Guillian Koornaar, Deputy Director, General Bureau of Statistics, email: gkori@hotmail.com (virtual)

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- Ella Gaspard, Programme Management Assistant, Economic Development Unit, email: ella.gaspard@eclac.org
- Miles Light, consultant, email: miles@mileslight.com

Annex II

EVALUATION QUESTIONNAIRE



Workshop on trade policy indicators using SIGCI

**Economic Development Unit
United Nations Economic Commission for Latin America and the Caribbean
Subregional headquarters for the Caribbean
Port of Spain, Trinidad and Tobago
8–9 December 2022**

EVALUATION FORM

Please answer the following questions (please print answers to open-ended questions):

Identification

Sex

- Female
 Male

Age (optional)

- 30 or under
 31 - 40
 41 - 50
 51 or over

Nationality: _____	
Country of current employment: _____	
Institution(s) you represent: _____	
Title / position: _____	
Type of organization you represent:	
National ministry <input type="checkbox"/>	Subregional institution <input type="checkbox"/>
National institution <input type="checkbox"/>	International organization <input type="checkbox"/>
Local / municipal institution <input type="checkbox"/>	Independent consultant <input type="checkbox"/>
Academic institution / university <input type="checkbox"/>	NGO <input type="checkbox"/>
Private sector <input type="checkbox"/>	Civil society <input type="checkbox"/>
	Other (please specify): <input type="checkbox"/>

Substantive content and usefulness of workshop/seminar

1. How would you rate the workshop overall?

1. Excellent 2. Good 3. Fair 4. Poor 5. Very poor 6. Not sure / no response

2. How would you rate the substantive content of the workshop?

1. Excellent 2. Good 3. Fair 4. Poor 5. Very poor 6. Not sure / no response

3. Did the workshop live up to your initial expectations?

1. Excellent 2. Good 3. Fair 4. Poor

4. How useful were the subjects presented and discussed for the work of your institution?

1. Excellent 2. Good 3. Fair 4. Poor 5. Very poor 6. Not sure / no response

5. Given the stated objectives of the workshop, how would you improve this workshop in terms of the subjects addressed to better achieve those objectives (for example, issues you would have liked to see addressed or analysed in greater depth, or subjects which were not so important)?

6. How useful did you find the analysis and indicators presented at the workshop for your work?

1. Very useful 2. Useful 3. Fair 4. Not very useful 5. Not useful at all 6. Not sure / no response

7. Based on the above, what specific aspects of the training would you consider incorporating in the work of your institution?

8. How useful did you find the workshop for engaging in conversations and exchanging experiences with representatives of other countries and institutions?

1. Very useful 2. Useful 3. Fair 4. Not very useful 5. Not useful at all 6. Not sure / no response

9. What learning experiences were especially important vis-à-vis your country's needs?

10. What do you consider to be the most significant outcome of the workshop?

Organization of the event

11. a. Did you have access to the materials for the workshop before seeing the presentations at this event?

- Yes
 No

b. Did you read them?

- Yes
 No

12. How would you rate the organization of the workshop? If you choose “poor” or “very poor” please explain your response so that we can take your opinion into account.

Quality of documents and materials provided	1. Excellent <input type="checkbox"/>	2. Good <input type="checkbox"/>	3. Fair <input type="checkbox"/>	4. Poor <input type="checkbox"/>	5. Very poor <input type="checkbox"/>	6. Not sure/ no response <input type="checkbox"/>
Availability of information on the website	1. Excellent <input type="checkbox"/>	2. Good <input type="checkbox"/>	3. Fair <input type="checkbox"/>	4. Poor <input type="checkbox"/>	5. Very poor <input type="checkbox"/>	6. Not sure/ no response <input type="checkbox"/>
Duration of the sessions and time for debate	1. Excellent <input type="checkbox"/>	2. Good <input type="checkbox"/>	3. Fair <input type="checkbox"/>	4. Poor <input type="checkbox"/>	5. Very poor <input type="checkbox"/>	6. Not sure/ no response <input type="checkbox"/>
Quality of the infrastructure (room, sound, catering)	1. Excellent <input type="checkbox"/>	2. Good <input type="checkbox"/>	3. Fair <input type="checkbox"/>	4. Poor <input type="checkbox"/>	5. Very poor <input type="checkbox"/>	6. Not sure/ no response <input type="checkbox"/>
Quality of support from the organizing Division or office to facilitate logistics for your participation in the event	1. Excellent <input type="checkbox"/>	2. Good <input type="checkbox"/>	3. Fair <input type="checkbox"/>	4. Poor <input type="checkbox"/>	5. Very poor <input type="checkbox"/>	6. Not sure/ no response <input type="checkbox"/>

13. Based on the ratings selected above, please indicate what worked well and what could be improved.

14. Do you have any other comments or suggestions on organizational aspects of the workshop?

15. What follow-up activities on topics covered in the workshop should ECLAC undertake in the future to support your country or institution?

Other works by ECLAC

16. In your opinion, how useful are the analysis and indicators provided by ECLAC for the formulation and implementation of trade policy in your country and in the region?

1. Very useful 2. Useful 3. Fair 4. Not very useful 5. Not useful at all 6. Not sure / no response

17. What other technical cooperation activities in the areas covered by the workshop would you suggest that ECLAC undertake in the future?

18. Are you familiar with the following ECLAC publications? If so, do you find their analytical content and recommendations useful?

The Economic Survey of the Caribbean

1. Very useful 2. Useful 3. Fair 4. Not very useful 5. Not useful at all 6. No response
7. Did not read it

The Preliminary Overview of the Caribbean

1. Very useful 2. Useful 3. Fair 4. Not very useful 5. Not useful at all 6. No response
7. Did not read it

Other documents produced by ECLAC (please specify):

1. Very useful 2. Useful 3. Fair 4. Not very useful 5. Not useful at all 6. No response
7. Did not read it

19a. Would you like to receive information about activities or publications by ECLAC in the area covered by the workshop?

- Yes
 No

b. If yes, please provide your e-mail address:

Thank you.



Economic Commission for Latin America and the Caribbean (ECLAC)
Comisión Económica para América Latina y el Caribe (CEPAL)
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