Reporting on the Impacts of Response Measures: Ghana Case Study

Workshop 1

10/12/2020

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Agenda

1. Background on Response Measures
2. Methodology and main results of Country Case Study: **Chile**
3. Lessons from past case studies
4. Outline of methodology for Country Case Study: **Ghana**

Background on response measures

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- We are in a period of transition towards a low GHG economy that needs to be managed
- Measures to undertake include mitigation measures that may have:
  - **Intended impacts:** GHG reductions, carbon costs, behavioural changes, etc.
  - **Unintended impacts:** employment changes, carbon leakage, changes in trade and investment patterns, energy poverty, etc.

Background on response measures (2)

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- The **unintended impacts** can be **positive or negative** and will affect all 3 pillars of sustainable development:
  - Economic
  - Social
  - Environmental
- Response Measures can be:
  - **International** (in other jurisdictions or global)
  - **Domestic** (in the jurisdiction itself)

Background on response measures (3)

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The three pillars of sustainable development

Economic impacts	• Trade or production impacts, growth/reduction in different sectors, competitiveness, carbon leakage, cost structures etc.
Social impacts	• Job losses/gains, need for retraining, democratic/political aspects, health impacts etc.
Environmental impacts	• Non-GHG emissions, water use, water pollution, biodiversity, air quality, deforestation, land use change etc.

Background on response measures (4)

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- There has already been considerable debate under the UNFCCC on trans-border impacts of climate change mitigation measures
- However, there continues to be:
  - **A lack of methodologies** on identification and quantification
  - **No data** to present impacts of policies in an empirical manner
  - **A lack of empirical studies** to provide more substance to the UNFCCC discussions

Transitioning from BUR to BTR

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- **Till 2024: Biennial Update Reporting (BUR):**
  - Allows for reporting on economic and social consequences of Response Measures by non-Annex I Parties
  - Decision 2/CP.17 Annex III contains the guidelines
- **From 2024 onwards: Biennial Transparency Reporting (BTR):**
  - Parties can report on how socio-economic impacts of adaptation and/or economic diversification actions with mitigation co-benefits are addressed
    - Annex III.D.78 of modalities, procedures and guidelines for the transparency framework
  - "Each Party is encouraged to provide detailed information, to the extent possible, on the assessment of economic and social impacts of response measures." (Annex III.D.90)
  - Potential for inclusion of reporting on domestic response measures from 2024 onwards

Reporting on impacts of Response Measures Methodology and Chile Case Study

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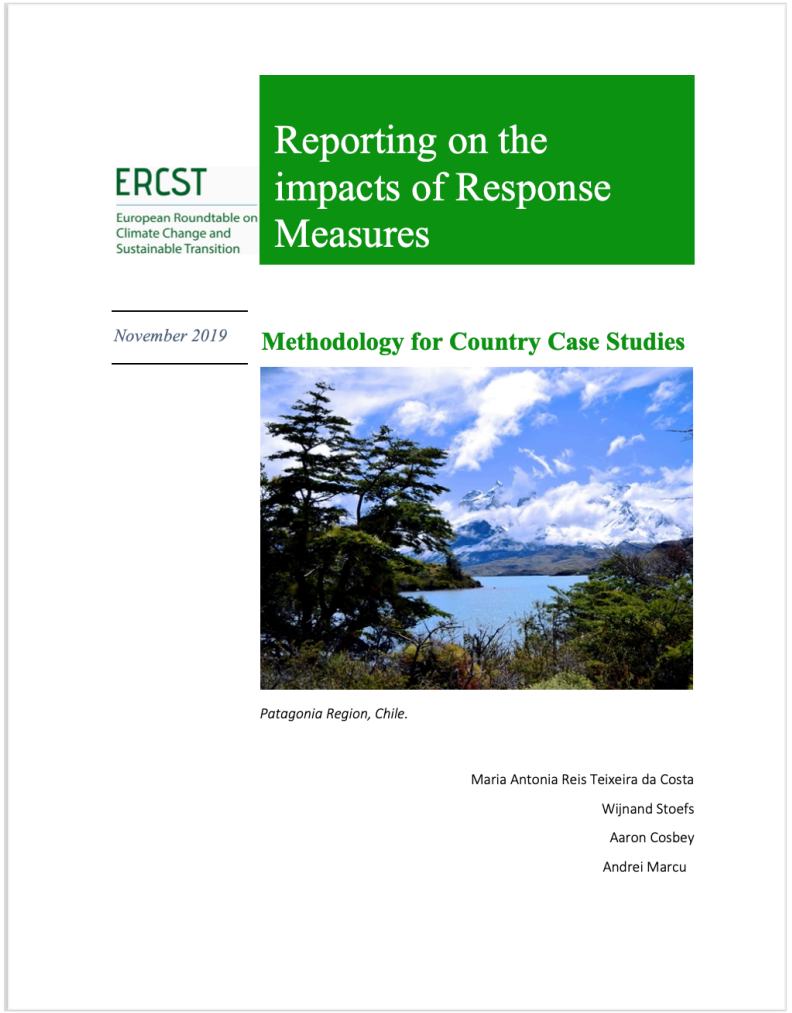
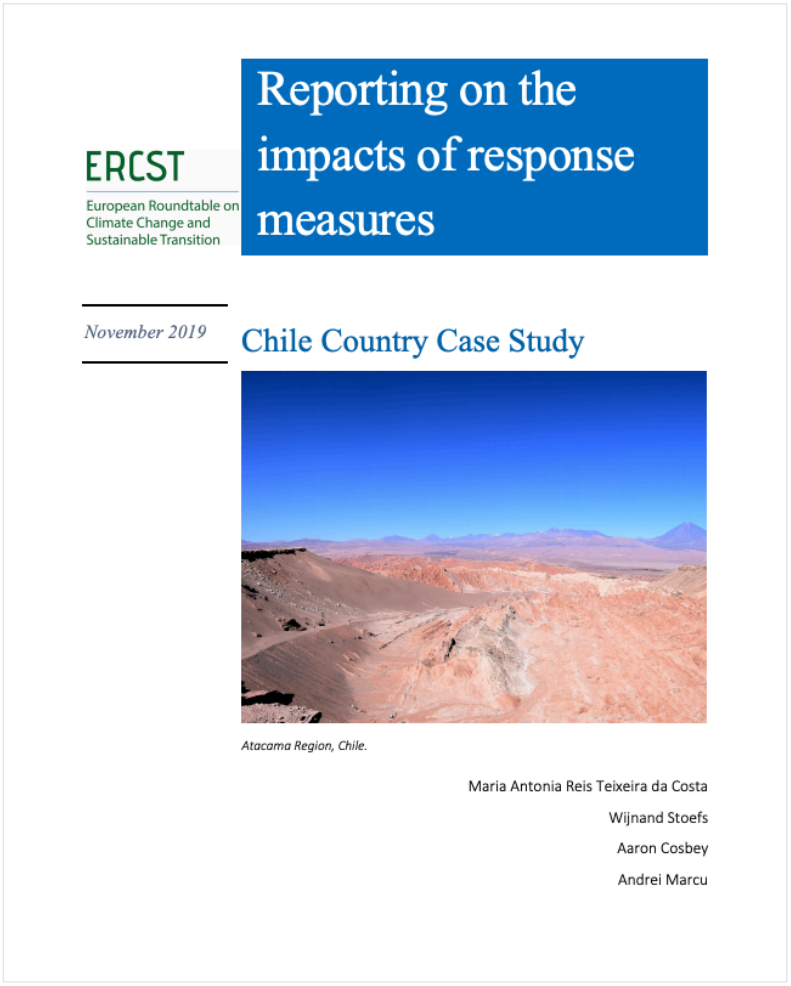
Reporting on the impacts of Response Measures

Methodology and Chile Country Case Study



ERCST,2019



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Overview of Case Study Steps

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Step 1: Country description

Step 2: Identify the top 100 sectors in terms of value added

Step 3a: Filter list of sectors potentially vulnerable to ***international*** response measures

Step 3b: Filter list of sectors potentially vulnerable to ***domestic*** response measures

Step 4a: Identify sectors vulnerable to ***international*** response measures

Step 4b: Identify sectors vulnerable to ***domestic*** response measures

Step 5: Stakeholder input to identify anything which was missed in Step 4

Identifying the vulnerable sectors

Overview of Case Study Steps (2)

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Step 6a: Identify ***international*** response measures that might impact sectors from Step 4

A. Identify main export partners of the vulnerable sectors
B. Search national and international databases
C. Filter the results

Step 6b: Identify ***domestic*** response measures response measures that might impact sectors from Step 4

A. Search national and international databases
B. Filter the results

(Country-level discretion whether to include positive as well as negative impacts)

Identifying response measures

Step 7: Stakeholder input to identify things missed in Step 6

Overview of Case Study Steps (3)

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Step 8a: Assess the impacts of ***international*** response measures on identified sectors

Step 8b: Assess the impacts of domestic response measures on identified sectors.

Assessing the impacts

Step 9: Look at possible ***domestic*** and international tools and support which may be needed to address the impacts.

Step 3a: Filter list of sectors potentially vulnerable to *international* response measures

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INTERNATIONAL

- **Step 3a is second filter**, with focus on:
  - Is the sector internationally traded?
  - Does the sector have significant greenhouse gas emissions?

Step 4a: Identify sectors vulnerable to *international* response measures

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INTERNATIONAL

- Thirds step in sector selection – identification of most vulnerable sectors. We propose two possible methods to do so:
  - **Method 1: Threshold method**
  - **Method 2: Weighted scores method**

Main results on Country Case Study CHILE

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Identifying vulnerable sectors

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The list itself (sectors not ranked in this table):

ISIC code	Sector Description
0729	'Mining of copper'
0122-0126	'Cultivation of other fruit' (e.g. tropical and subtropical fruits, citrus fruits, pome fruits and stone fruits, other tree and bush fruits and nuts, oleaginous fruits)
17	'Manufacture of paper and paper products'
2011	'Manufacture of basic chemicals'
19	'Manufacture of coke and refined petroleum products'
0121	'Cultivation of grapes'
1102	'Manufacturing of wines'
032	'Aquaculture'
031	'Fishing'
WTO 1.33 and 1.36	Tourism

Taxonomy of International Response Measures

Type of response measures	Impacts in country undertaking the response measure	Possible impacts in other countries
Carbon taxes	decreased demand for carbon-emitting goods; increased demand for low-carbon emitting goods	- Negative effects: fossil fuel producers. + Positive effects: low-carbon goods (e.g., renewable energy/EV components)
Subsidies		
… for low-carbon transport	decreased demand for goods associated with internal combustion engines.	- Negative effects: producers of fossil fuels, lead. + Positive effects: producers of EVs, cobalt, lithium, vanadium.
… for low-carbon energy production	decreased demand for thermal fuels	- Negative effects: coal, natural gas, oil producers. + Positive effects: low-carbon energy technology (e.g., PV solar cells)
… removal of, for fossil fuel production	decreased production of fossil fuels	- Negative effects: fossil fuel consumers. + Positive effects: fossil fuel producers.
… removal of, for fossil fuel consumption	decreased consumption of fossil fuels	- Negative effects: fossil fuel producers. + Positive effects: fossil fuel consumers.
… for energy efficiency in buildings	decreased energy consumption	Effects depend on fuel source used in implementing country buildings. If fossil fuels used: - Negative effects on producers; + Positive effects on consumers.
Green procurement		
of energy	decreased demand for thermal fuels, increased demand for low-carbon energy technologies	- Negative effects: coal, natural gas producers. + Positive effects: coal and natural gas consumers (price decrease), producers of alternative energy tech.
of automobiles	decreased demand for goods associated with internal combustion engines.	- Negative effects: fossil fuel producers. + Positive effects: cobalt, lithium, vanadium producers, EV producers.

Taxonomy of International Response Measures (2)

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Type of response measures	Impacts in country undertaking the response measure	Possible impacts in other countries
Cap and trade schemes	decreased demand for carbon-intensive goods; increased demand for low-carbon goods	- Negative effects: fossil fuel producers. + Positive effects: renewable energy/low-carbon transport tech producers; fossil fuel consumers.
Liberalization of trade in environmental goods	boost in consumption of green goods	+ Positive effects: producers of covered environmental goods
Border carbon adjustment	decreased demand for high-carbon goods (aluminum, steel, cement, plastics, pulp & paper); increased demand for substitutes.	Depends on carbon intensity, and regime details, but likely: - Negative effects: aluminum, steel, cement, plastics, pulp & paper. + Positive effects for low-carbon producers.
Standards and labelling requirements		
for agricultural goods, involving GHG emissions	depends on details of the scheme, but likely loss of market share for non-certified air-freighted goods, inter alia.	Depends on details of the scheme, but possible: - Negative effects for producers of perishable fruits such as berries, high-value horticulture
mandatory efficiency performance standards for consumer goods, industrial equipment	restricts the market to high-efficiency products; reduces demand for fuel	- Negative effects: fossil fuel producers; producers of low-efficiency consumer goods and industrial equipment. + Positive effects: fossil fuel consumers; producers of high-efficiency goods/equipment
International aviation levies	n/a - international	- Negative effects: flight-based tourism sectors (e.g., hotels, restaurants); producers of air-freighted (perishable) goods.
International maritime levies	n/a - international	- Negative effects: increased costs of imports and exports using maritime transport

Identifying response measures

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- We built a list of policies and measures in other jurisdictions and on the international level for each of the 10 sectors.
- For each sector, we looked at:
  - The top 5 countries exported to, and
  - International transportation policies (aviation and maritime transportation)

Identifying response measures (2)

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- This gave us a list of 15 countries to look at:
  - People's Republic of China
  - Japan
  - United States of America
  - Republic of Korea
  - Brazil
  - India
  - Russian Federation
  - Spain
  - The Netherlands
  - Belgium
  - Colombia
  - 'Other Asia'
  - Peru
  - Argentina

Identifying response measures (3)

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- Main sources for policies:
  - European Environmental Agency policy database on climate change mitigation policies and measures in Europe
  - OECD Database on Policy Instruments for the Environment
  - UNFCCC NDCs registry and IGES NDC database
  - ICAP Carbon market database
  - World Trade Organisation Environmental Database
  - International Energy Agency/IRENA Joint Policies and Measures database
  - Food and Agriculture Organisation FAOLEX Database
  - International Trade Centre Sustainable and Standards Map
  - International Civil Aviation Organisation policy factsheets
  - International Maritime Organisation policy factsheets
  - London School of Economics and Political Sciences Climate Change Laws of the World database (largely overlapping with others above)
  - UNFCCC Response Measures Synthesis Report (less useful)
  - International Energy Agency Building Energy Efficiency Policies Database (less relevant)

Identifying response measures (4)

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List of potential policies for each country was extremely long:

Country	Preliminary numbers for possible measures of top trade partners of vulnerable sectors
China	2332
Japan	441
USA	3304
Rep. Of Korea	516
Brazil	1901
India	567
Russian Federation	3745
Spain	2352
Netherlands	453
United Kingdom	2646
Belgium	1497
Colombia	1706
Other Asia, nes	N/A
Peru	3059
Argentina	2128

Other Asia, nes: not available in most databases – had to be left out

Identifying response measures (5)

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- Narrowed down extensive list by labour-intensive policy-by-policy check on several criteria:
  - *Deleting duplications* between databases
  - Direct/indirect *climate change mitigation policy*
    - Direct policy: policy is meant to limit GHG emissions
    - Indirect policy: policy can have significant GHG mitigation co-benefits
  - Policy has an *international perspective* through which Chilean sectors could be impacted
  - Policy is *enacted in the sector* (or a closely related sector) to one of the identified 10 Chilean sectors, in one of the main 5 export countries

Identifying response measures (6)

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Final numbers of potentially relevant international climate change policies that could impact sectors deemed most vulnerable

Country	Number of potentially relevant climate change policies
China	39
Japan	7
USA	44
Rep. Of Korea	13
Brazil	5
India	27
Russian Federation	0
Spain	13
Netherlands	4
United Kingdom	16
Belgium	4
Colombia	2
Peru	8
Argentina	19
International Organizations (ICAO and IMO)	3

International: Sectors and policies

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International sector 1: Mining of Copper (ISIC Rev 0729)

Main products are copper ores and concentrates

China	Japan	Republic of Korea	India	Spain
National ETS	Grants and direct payments to renewable energy producers	Act on Encouragement of Purchase of Environment-Friendly Products.	Rajasthan - VAT exemption for generation of electricity from renewables	EU ETS
Subnational ETS pilots		Act on Encouragement of Purchase of Green Products.	Solar Photovoltaics, Systems, Devices and Components Goods (Requirements for Compulsory Registration) Order, 2017	Royal Decree No. 287/2015 - Regulates the direct granting of subsidies for the purchase of electric vehicles within the framework of the Comprehensive Strategy for the promotion of electric vehicles in Spain 2010-2014 (MOVELE Program 2015).
13th Five-Year comprehensive energy-saving and emission reduction work plan.		Enforcement Decree of the Framework Act on Low Carbon, Green Growth (Presidential Decree No. 22124 of 2010).	State level solar and wind power polices and strategies	Directive 2009/28/EC on the Promotion of Electricity Produced from Renewable Energy Sources
China National Plan for Tackling Climate Change (2014-2020).		Regulation on Energy Efficiency Labelling and Standards	National Action Plan on Climate Change.	Renewable Energy Road Map - Renewable energies in the 21st century: building a more sustainable future
Industrial Green Development Plan (2016-2020).		Act on the Promotion of Saving and Recycling of Resources	National wind-solar hybrid policy	Development plan of electrical energy transport network 2015-2020

International: Sectors and policies (2)

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International sector 1: Mining of Copper (ISIC Rev 0729)

Main products are copper ores and concentrates (2)

China	Republic of Korea	India	Spain
Measures for the management of the energy-saving low-carbon-emission product certification.	Framework Act on Low Carbon, Green Growth.	Comprehensive Policy on Decentralized (Off-grid) Energy Generation Projects based on New and Renewable Energy (Non-Conventional) Energy Sources – 2016	Renewable Energy Plan 2011 - 2020
Renewable Electricity Quota and Assessment Method (Draft for Opinions) - Planned	Regulation on Energy Efficiency Labelling and Standards (MKE's Notification 2011-263)	India 175 GW Renewable Energy Target for 2022	National Renewable Energy Action Plan 2011-2020
Action Plan for the Development of Smart Photovoltaic Industry		National Renewable Energy Law 2015 - DRAFT	Spanish Strategy on Climate Change and Clean Energy 2007-2012-2020
Renewable Energy Green Certificate and Trading Mechanism		Pilot Emissions Trading Systems	
The Twelfth Five-Year Plan for Renewable Energy			
China 13th Solar Energy Development Five Year Plan (2016-2020)			
China's National Climate Change Programme			
Renewable Energy Law of the People's Republic of China			

IMO: Possible introduction of a CO2 Tax

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Macroeconomic impacts

- IMO carbon tax in essence reduces the export prices received by producers by increasing transport costs.
- The expected overall GDP reduction is limited in for all three potential IMO carbon tax price levels:

	2020	2030	2040	2050
Higher tax rate (50 USD/tonne)	-0.012%	-0.024%	-0.031%	-0.037%
Medium tax rate (30 USD/tonne)	-0.007%	-0.015%	-0.019%	-0.023%
Lower tax rate (15 USD/tonne)	-0.004%	-0.007%	-0.009%	-0.011%

ICAO: Upcoming introduction of CORSIA

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Effects on tourism sector

- Main effect on the tourism sector is the reduced income for the sector due to a decrease in the number of visitors

EUR 15							
	Long Trip		Medium Trip		Short Trip		Total
	business	personal	business	personal	business	personal	
Reduction in passengers	318	2,804	455	3,696	529	1,978	9,780
Reduction in spending (USD)	511,195	3,315,847	623,708	4,116,311	470,052	1,022,852	10,059,965
Reduction in total spending by passengers (thousand million pesos)	0.35	2.24	0.42	2.79	0.32	0.69	6.81

ICAO: Upcoming introduction of CORSIA (2)

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EUR 30							
	Long Trip			Medium Trip		Short Trip	Total
	business	personal	business	personal	business	personal	
Reduction in passengers	1,718	11,471	2,456	15,120	2,859	8,093	41,717
Reduction in spending (USD)	2,761,739	13,564,935	3,366,653	16,839,456	2,540,414	4,185,004	43,258,200
Reduction in total spending by passengers (thousand million pesos)	1.87	9.18	2.28	11.40	1.72	2.83	29.28

ICAO: Upcoming introduction of CORSIA (3)

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Main direct impacts:

- Reduced spending by travellers in the retail sector
  - 15 EUR fare increase = -3,1 billion CHP
  - 30 EUR fare increase = -13,3 billion CHP
- Total of the direct effects across 60 sectors in model
  - 15 EUR fare increase = -6,81 billion CHP
  - 30 EUR fare increase = -29,28 billion CHP

Indirect impacts:

- Total reduced spending by travellers across 60 sectors in model in indirect impacts
  - 15 EUR fare increase = -4,58 billion CHP
  - 30 EUR fare increase = -19,71 billion CHP

Lessons of the past: Chilean Response Measures

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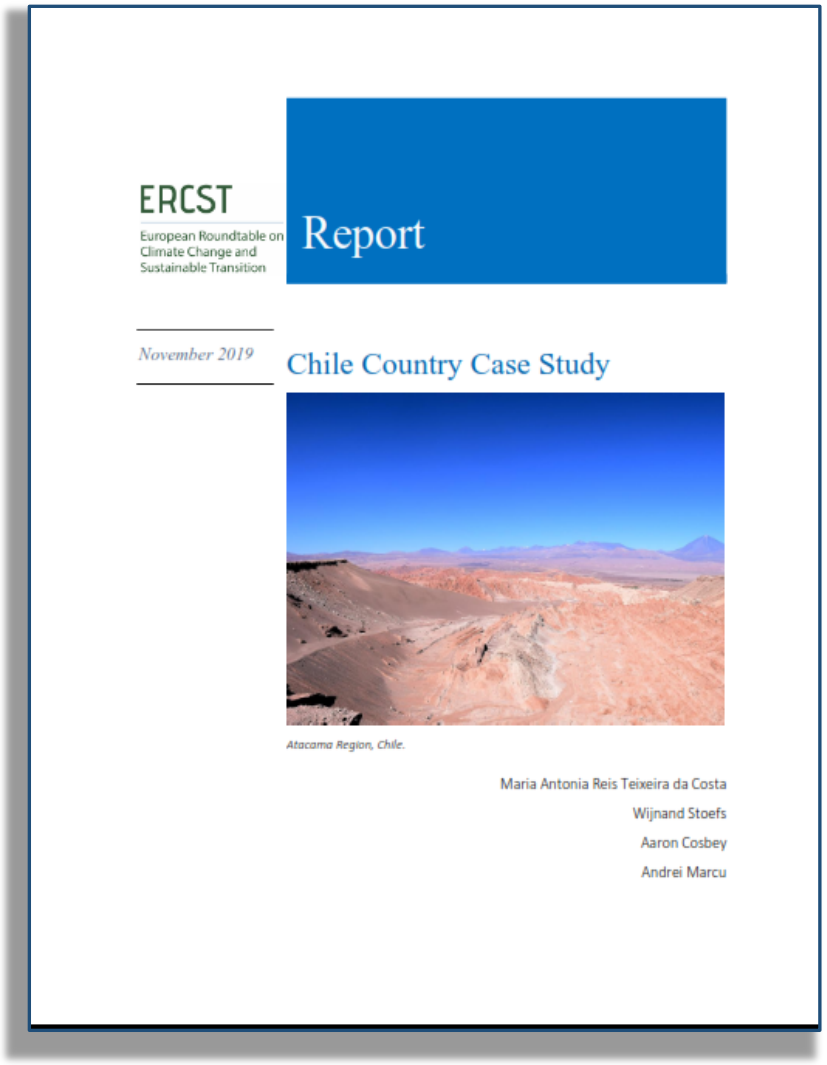

- As discussed, ERCST piloted an assessment of response measures for Chile
- Challenges:
  - Availability of disaggregated sectoral data on GHG intensities, employment, value added
  - Database approach to identifying relevant RMs: thousands of national, sub-national policies
  - Quantification of impacts often difficult: no existing assessments; modelling challenging, requiring too many assumptions.

Lessons of the past: Chilean Response Measures

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- **Study provides significant step for developing detailed methodology for analysing RM**
- **Providing starting point + template for others to follow and adapt:**
  - Dependent on national circumstances, economic structure, key sectors, strength of institutions and engagement of stakeholders.
- **Fits BUR and BTR reporting**
- **Methodology describes data, time- and labour-intensive process**
- **Way to simplify methodology:**
  1. Limit number of sectors that are deemed vulnerable;
  2. Limit the number of response measures analysed;
- **Found that:**
  - Overall number of important domestic and international RM is:
    - Relatively limited
    - Concentrated in a limited number of sector
  - Limited number of policies could impact many sectors
    - International transportation

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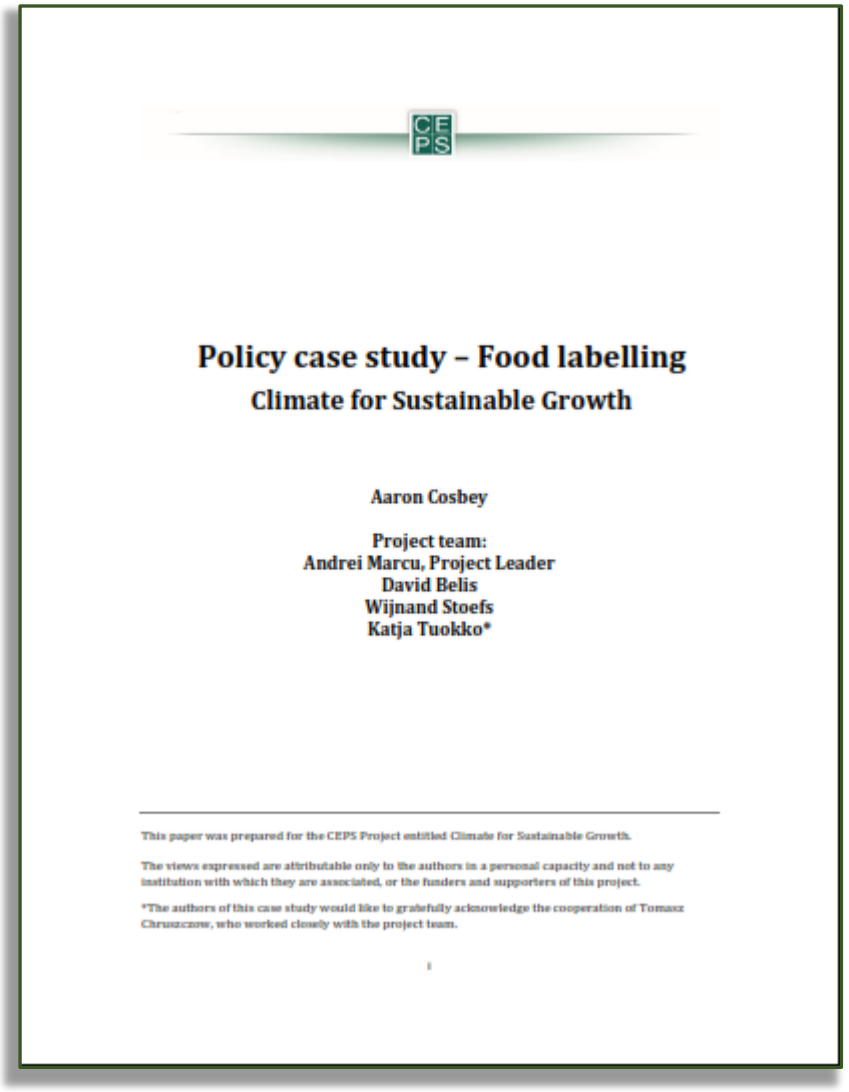
Lessons of the past: Cocoa Labelling



Policy case study – Food labelling

Climate for Sustainable Growth

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This paper was prepared for the CEPS Project entitled Climate for Sustainable Growth.

The views expressed are attributable only to the authors in a personal capacity and not to any institution with which they are associated, or the funders and supporters of this project.

*The authors of this case study would like to gratefully acknowledge the cooperation of Tomasz Chruszczow, who worked closely with the project team.

- The ERCST project team looked at the cocoa sustainability labelling in Ghana, and its potential social, economic and environmental impacts.
- Lessons:
  - Potential impacts are significant, so standard-setters need to consider, manage
  - Impacts can be mitigated by parallel measures to ensure good social outcomes
  - (Note: these are mostly private sector measures, so not technically response measures, but the lessons still apply)

Reporting on the Impacts of Response Measures: Ghana Case Study

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Project Objectives

- Contribute to Activity 4 of the KCI work programme by developing a case study for the country of Ghana, to enhance identify, measure, analyse, and understand the impacts of the implementation of response measures in the jurisdiction, as well as identify measures to address their impacts
- This information from the Informal Dialogue will be shared with the KCI and the Forum.

Possible Adaptations

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- In the filtering process, filter down by trade stats first, since these are widely available. Result is less challenge in finding GHG-intensity stats – fewer sectors to work with.
- Focus on aggregated classes of goods – e.g., 2-digit level HS codes
- Only search for response measures in key trading partners, and not by database approach – more targeted
- Quantification of potential impacts as a scenario exercise, and only where sufficient data exists; alternative is qualitative assessment.

Methodology for Case Study: Ghana

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- **Step 1: Describe the country and its characteristics**
  - Overview Ghana country characteristics, including main sectors of the economy and economic performance
  - Will be carried out mainly through desk research and with the aid of the EPA
- **Step 2: Identifying important sectors to the Ghanaian economy**
  - Sectoral value added will be taken as an indicator:
    a) **If sufficient information available**, then the sectors of the economy will be ranked based on their value-added contribution to national GDP. Based on this ranking and in consultation with local stakeholders, the top 10 sectors will be taken as the basis to identify international RM
    b) **If information not available**, then close collaboration with relevant Ministries within the Ghanaian Government will help inform this step

Methodology for Case Study: Ghana (2)

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- **Step 3: Identify sectors potentially vulnerable to international response measures**
  - Two indicators will be taken into account:
    a) **Trade intensity:** to understand which sectors are most trade-exposed
    b) **GHG intensity:** of each sector allows for exclusion of those sectors with low/no GHG emissions, as they will be less - or not at all - exposed to climate mitigation policies
      - Subject to the availability of this data. If it is not available, then the compilation of relevant sectors will be based on the value added and trade intensity criteria
- **Step 4: Identify relevant response measures**
  - Identifying which countries are Ghana's main trading partners for different sectors will allow an examination of relevant measures and help to identify which climate policies with international implications were put in place from their part, if any, that will affect Ghana.
  - To retrieve this information, international trade databases will be used.
  - Close collaboration with local stakeholders, who will be able to provide insight into key sectors of the economy and the respective international RM

Methodology for Case Study: Ghana (3)

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- **Step 5: Assess the impacts of international response measures**
  - Analyze the impacts of the identified vulnerable sectors and the relevant RM with either qualitative and/or quantitative methods
    a) **Quantitative assessment:** will be performed for a limited number of RM, depending on data and model availability
    b) **Qualitative assessment:** will in turn inform the quantitative assessment by highlighting areas of concern that may need to be addressed in more detail
- **Step 6: Look at possible domestic and international tools and support which may be needed to address the impacts**
  - Several domestic and international mitigation tools will be considered which can help Ghana reduce its vulnerability to RM
  - This step will be mainly qualitative and informed by discussions with local stakeholders

Next Steps

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- **Webinar 1:** explain the methodology that will be used to carry out the project, get input from participants and respond to questions.
- **Webinar 2:** *Step 2 of methodology* - focus on identifying important sectors to the Ghanaian economy
- **Webinar 3:** *Step 3 of methodology* - limit the list of sectors potentially vulnerable to international response measures
- **Webinar 4:** *Step 4 of methodology* - identify relevant response measures
- **Webinar 5:** *Step 5 of methodology* - present the quantitative and qualitative assessment of the impacts of RM on Ghana
- **Webinar 6:** the case study will be presented at a side event at SBSTA 53

Backup Slides

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