

Panama

Evaluation of sectors, actions and projects that could form elements of a national emission reduction plan.

Project commissioned by CATHALAC

Project implemented in 2016-2017
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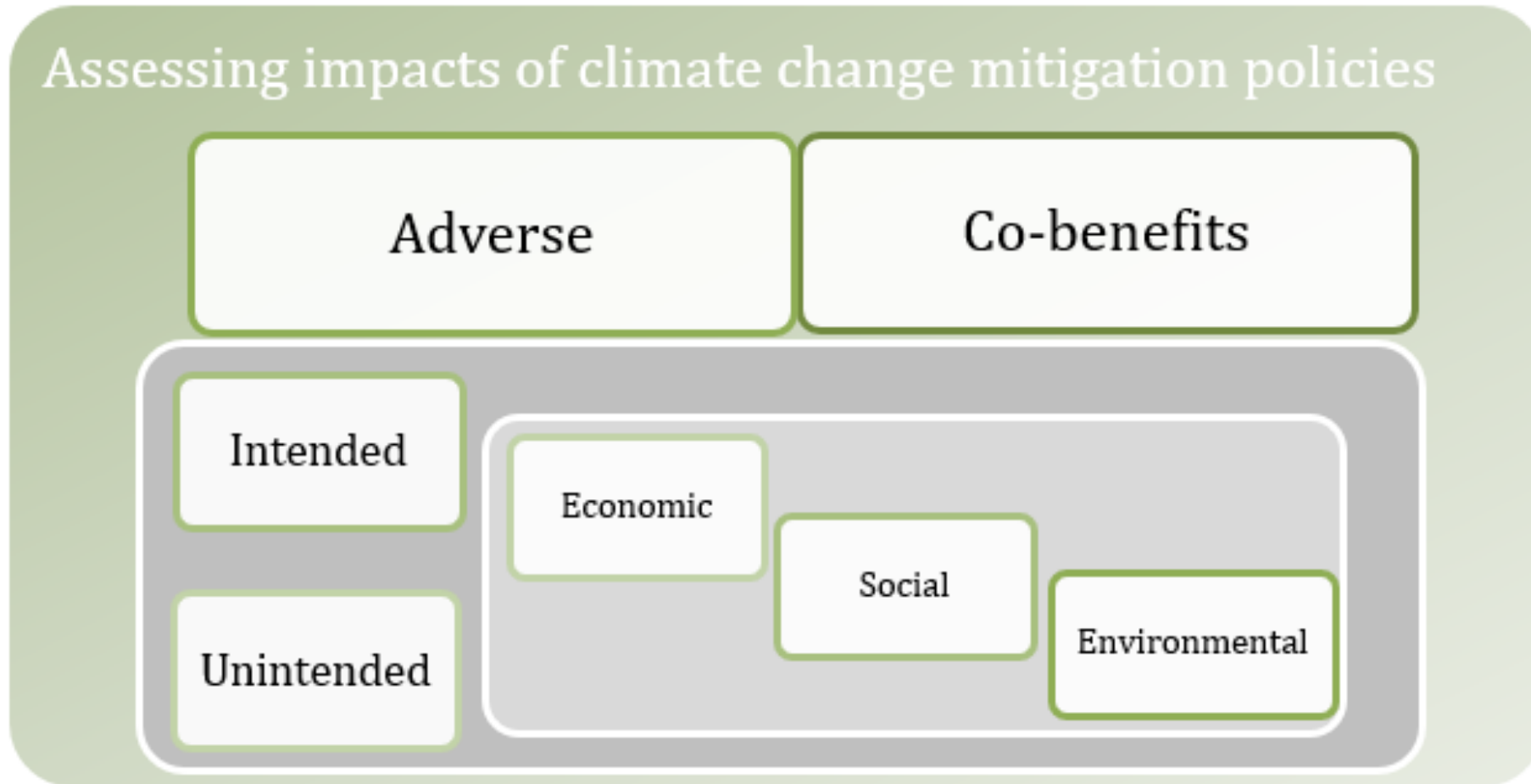
Background

- Project fed into 3rd National Communication and Biennial Update Report of the Republic of Panama
 - Assistance to the Ministry of Environment during preparation of 3rd Nat Com
 - Built on desk research and interviews with local stakeholders
- Focus on the low-carbon transition of the Panamanian Economy
- Increase understanding of the impacts of climate change policies
 - Help increase speed and ambition of low-carbon transition
 - Address concerns in Panama on the (perceived) socio-economic impacts of climate change policy

Background (2)

- Climate change needs an urgent, efficient, and sustainable response
- Low-carbon transition will have impacts
 - Domestic AND international impacts
 - Environmental, economic AND social impacts
 - Positive AND negative impacts
 - Intended AND unintended impacts
- Fundamentally: how to manage transition while keeping harmony between three pillars of sustainable development

Background (3) – typology of impacts



Source: Adaptation of Marcu, Stoefs et al (2016)

Background (4) – examples of impacts

- Economic impacts: competitiveness impacts of asymmetrical climate change policies (such as carbon leakage), value of investments, growth or decrease of economic sectors, changes in production, trade flows or investment patterns,...
- Social impacts: job losses and gains, health impacts, skills development, relocation of communities, changes in disposable income,...
- Environmental impacts: water, air and soil quality, biodiversity, land use change, ...

Methodology - scope

- Focus of the project: unintended impacts (positive and negative) of climate change mitigation policies
- Examples of unintended impacts:
 - Changes in employment, carbon leakage, changes in competitive landscapes and resulting changes in trade and investment patterns, local pollution during the building of low GHG infrastructure, downwards pressure on disposable incomes (especially for poorest or most vulnerable households) and energy poverty.

Scope of project limited by prior assessments done on policy and activity level

Methodology (2) – Main elements of project

- Methodology (Report 1)
- Relevant country characteristics (Report 2)
- Drivers and motivations for transition (Report 2)
- Concerns linked to transition (Report 2)
- Policies (to be) put in place for transition (Report 2)
- Impacts of policies (Report 3)
- Developing a low-carbon development strategy (Report 4)
- Analysis of National MRV System (Report 5)

Methodology (3) – Assessing impacts

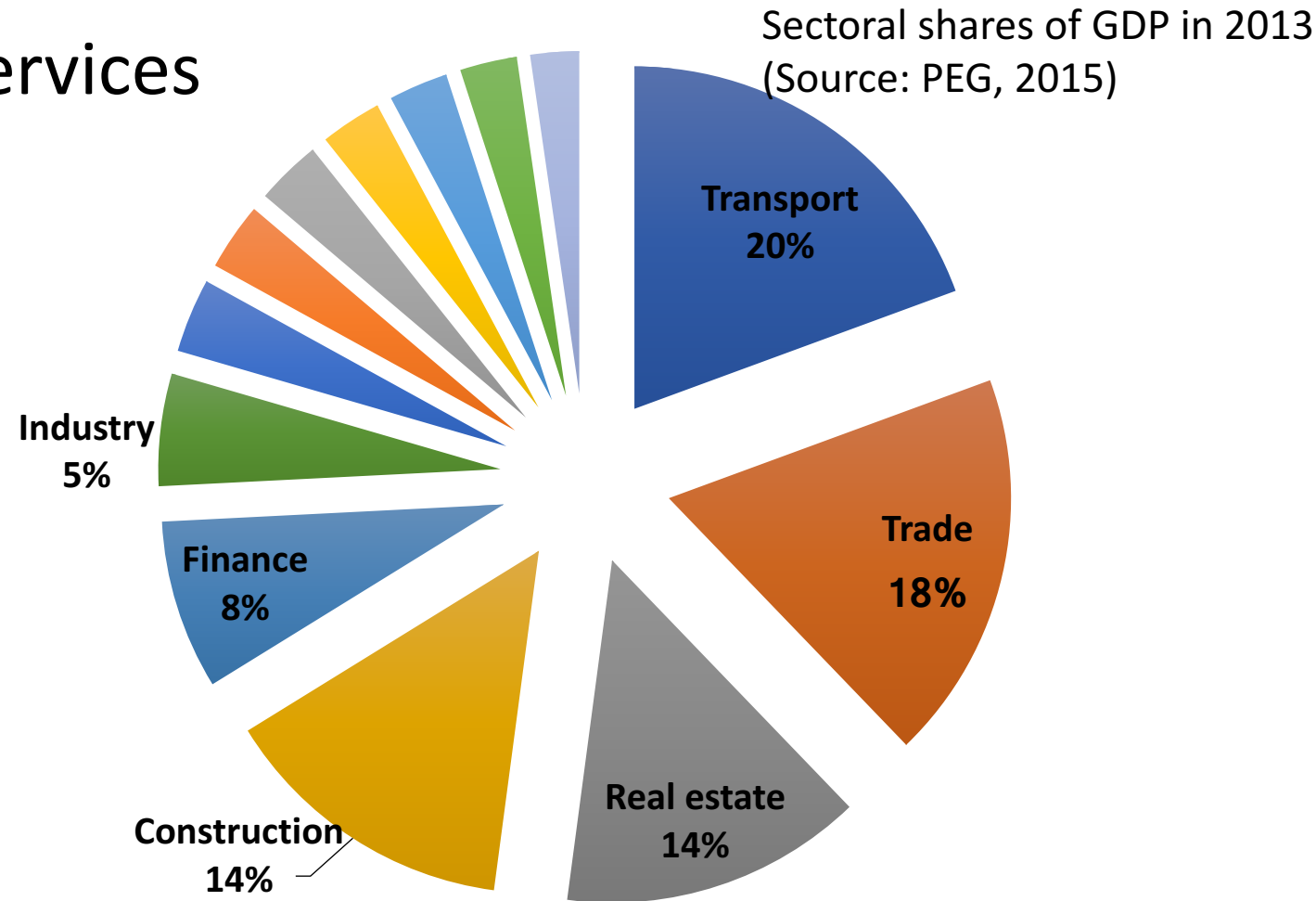
- **Step 1:** Identify and lists the domestic and international policies that are directly or indirectly related to climate change.
- **Step 2:** Identify key sectors of the economy and/or those that have high GHG emissions and can therefore be expected to be substantially impacted by mitigation policies.
- **Step 3:** Identify the main policies (domestic and international) that are relevant to these sectors.
- **Step 4:** Identify the impacts (positive and negative) of the policies in step 3. Find (quantitative) data in the policies, impact assessments and other available studies related to environmental, economic and social impacts

Country characteristics -Geographic and international context

- Located on Isthmus of Panama, main population centres and infrastructure are low-lying
- Electricity generation, drinking water, Panama canal and agriculture depend on climate patterns and rainfall
- Climate change could lead to a 4-7% decrease in productivity agriculture sector
- Internationally: active party in UNFCCC negotiations

Country characteristics (2) - Economic performance and key sectors

- GDP growth of around 6% per annum (2013-2015)
- Economy dominated by services (85% of GDP in 2013)
- Very open economy,
 - FDI at 14% of GDP (2015)
 - Total value of imports: 61,4% of GDP (2015)
 - Total value of exports: 47% of GDP (2015)



Country characteristics (3) – Main emission sources

- Total domestic emissions estimated at minus 15 million tonnes of CO₂e for 2015 (absorbed)

<u>Sector</u>	<u>Subsector</u>	<u>Net emissions in tonnes of CO₂ e</u>
Energy sector	Electricity generation (2015)	2.2 million tonnes
	Road transportation (2014)	4,0 million tonnes
LULUCF	Livestock	3,1 million tonnes
	Forestland	-31,4 million tonnes
	Cropland, grassland and other land (including land use change)	15,6 million tonnes
	Biomass burning	1,4 million tonnes
	LULUCF total (2013)	-10,7 million tonnes
Residential (2005)		0,8 million tonnes
Maritime (estimate for 2014)		173.1 million tonnes

Sources: electricity generation: ETESA, transportation: Energy Secretariat, LULUCF: CATHALAC, Panama NDC, Residential: CATHALAC and Maritime: UNCTAD and IMO (3rd GHG review),

Country characteristics (4) - Sector selection for impact assessments

- Energy Sector
 - Electricity generation
 - Hydro: 63% in 2015 (nearly 10 million MWh)
 - Carbon intensive thermal (33%) – mostly Bunker C fuel, coal and diesel
 - Renewables: 4% (mostly wind)
 - Transportation (including biofuels)
 - Gasoline: over 912 million litres sold in 2014
 - Diesel: over 676 million litres sold in 2014
- LULUCF sector
 - Deforestation main driver of emissions in LULUCF
 - Due to expansion of agriculture, mining, hydroelectric projects and road projects
 - Has slowed down (30k ha/ year on average 1990-2000, 11k ha/year on average 2006-2012)

Country characteristics (5) - Drivers for transition from policy documents

- Economic drivers:
 - Decrease dependency on imported fossil fuels
 - Economic benefits of cheaper renewable energy
 - Diversify energy matrix away from hydro and fossil fuels
 - Increase access to electricity and reduce energy poverty
- Environmental drivers:
 - Mitigating climate change (also economic benefit to it)
 - Move towards sustainable development
 - Reduce local pollution (especially air quality)

Country characteristics (6) - Concerns or barriers related to the implementation of climate policies that are prevalent in the country

- Economic concerns and barriers mainly relate to cost
 - For example impact carbon tax on price of fuel
 - Cost of climate change policies for government budget
- Social and environmental concerns:
 - Project-related (hydro dams)
 - Social programs seen as better investments
- Political barriers:
 - Lack of policy consistency – implementation of renewable energy projects not as easy as some fossil fuel projects (natural gas infrastructure)

Climate change mitigation policies

- Not all domestic and international policies analysed:
 - Recent policies and projects are considered more relevant (some drafts are included as they were expected to be published soon without major amendments.
 - The focus is on the policies and projects where impacts can be identified

Climate change mitigation policies (2)

- Three levels of policies analysed:
 - General climate-related policies
 - Energy Policies
 - LULUCF policies

- General climate-related policies
 - Strategic Plan of the Government 2014-2019 – One Country
 - Law 8, 2015 (creation of Ministry of Environment)
 - National Climate Change Strategy of Panama

Climate change mitigation policies (3)

- Energy Policies

- National Energy Plan 2015-2050
- Short Term Operational Plan (2015-2019) (energy generation)
- Law 42 of April 20, 2011 and Law 21 of 2013 (biofuel targets)
- Law 45 of August 2004, Law 44 of 2011, Law 18 of 2013 and Law 37 of 2013 (renewable energy incentive schemes)

- LULUCF Policies

- Reforestation project 'Alliance for 1 million'

Climate change mitigation policies (4)

- International policies

- Main UNFCCC resolutions and agreements
- Voluntary markets
- CDM
- IMO
- ICAO

Identification of impacts in Panama

- Three levels at which to identify impacts
 - Strategic level
 - Policy level
 - Activity level

Identification of impacts in Panama (2)

- Strategic level
 - Long-term impacts of long-term strategic plans
 - What does transitioning to a low-carbon economy mean?
 - Sectoral shifts in economic activity and employment
 - Government does not rigorously assess potential impacts of strategic documents

Identification of impacts in Panama (3)

- Policy level
 - Short and long-term impacts of policies
 - Is done through the Strategic Environmental Evaluation (SEE)
 - Process of how to use SEE (and related environmental impact assessments) were still under development by the end of the project
 - In addition: sectoral SEE had not been completed

Identification of impacts in Panama (4)

- Activity level
 - Short and long-term impacts of activities and projects
 - Environmental and social impacts covered
 - Impacts during construction or implementation, during operation, and during decommissioning
 - Is done through Environmental Impact Assessments (EIA)
 - Very detailed procedure
 - BUT: no follow up to see if the EIA was actually correct and no other impacts have materialized
 - Three different categories of EIAs
 - Which one is used is dependent on the expected potential impacts of a project
 - Category 2 and 3 cover social impacts

Identification of impacts in Panama (5)

- Main issues:

- Lack of ex ante assessment by government of Panama on impacts of policies, activities and strategies

- When assessment is done: scope is limited

- Economic impacts: expected savings for households, energy consumers, government

- Environmental impacts: expected changes in GHG emissions

- Lack of ex post assessment

- Which impacts materialized?

- How large were they?

- How should impact assessment tools be reviewed

Impacts of general climate change policies in Panama

- Impacts of economic planning documents challenging to assess
 - Uncertainty related to detailed implementation
 - Uncertainty related to long term stability of plans
 - No impact assessment has been done in Panama on strategic goals and vision

Impacts of energy sector policies in Panama

- Some impacts of specific policies have been assessed by Ministry of Environment, and by civil society actors
 - Focus on economic impacts, and changes in GHG emissions
- Other impacts have not been sufficiently assessed ex ante
- No ex post assessments

Examples of main (expected) socio-economic impacts energy sector policies

- 1,4 billion USD invested in renewable energy between 2011 and 2015
- Expected decreases in costs (for households, industry and government) due to energy efficiency gains
- Decreased cost of electricity generation due to expansion of renewable energy capacity
- Air quality improvements due to limiting coal-fired electricity generation
- 3000 jobs created in biofuels sector (before government support was decreased)
- 1-3 USDcent increase in the cost of fuels due to biofuels
- Over 520 MW extra capacity in renewable energy (3,600 GWh in 2016)

Main (expected) environmental impacts energy sector policies

- GHG emission related:
 - Significant decrease in GHG
 - ~30 million tonnes annually by 2050 in energy generation sector
 - ~50,000 tonnes annually through biofuels
 - Lack of clarity on methodology used to estimate decrease in GHG emission
 - Carbon intensity of electricity generation has decreased
- Non-GHG emission related:
 - Not assessed by Impact Assessments

Main (expected) impacts LULUCF sector policies

- **Decrease in deforestation**
 - Over 30k ha/year on average 1990-2000
 - Over 11k ha/year on average 2010-2012
- **Decrease in emissions from deforestation**
 - 10 million tonnes per year (1990-1994)
 - 3,8 million tonnes per year (2005-2012)
- **Increase in reforestation**
 - 1411 ha in 1992
 - 3287 ha in 2012
- **No quantitative assessment of other impacts available**

Main (expected) impacts international policies and activities

- Only impacts CDM projects had been identified and quantified
 - Wealth of information on each CDM project
 - CDM procedures on impact assessment
 - 21 CDM projects in Panama in April 2017
 - CDM procedures also include recommendations on how to address impacts

Reports 4 and 5

- Different deliverables – less linked to Response Measures
 - Report 4: focus on how to make a low-carbon transition strategy
 - Report 5: focus on MRV systems in Panama, mainly in the LULUCF and energy sectors

Challenges for the project

- **Lack of data**

- Challenging to quantify size and timeline of impacts without necessary data
- Lack of ex ante AND ex post data on impacts climate change policies
- Lack of analysis by government of their own plans, policies and activities
 - Identifying impacts not a priority before the implementation of policies and projects

RESULT: analysis often limited to qualitative level

Challenges

- **Lack of methodologies** to assess impacts – especially of international policies
- **Lack of awareness** of impacts
 - Impacts of domestic policies, but especially of international policies
- Many policies and assessment tools were under review
 - Lack of clarity on the direction of some final versions (for example EIA review)

Thank you!