

Renewable Energy and Energy Efficiency in Developing Countries:

Contributions to Reducing Global Emissions





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ISBN No: 978-92-807-3671-7

Job. No: DTI/2132/PA

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ACKNOWLEDGEMENTS

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Case study support:

We thank and acknowledge following individuals for their valuable assistance providing consultation, feedback and information to inform the case studies.

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THOMSON REUTERS

A contribution from Thomson Reuters report "Global 250 Greenhouse Gas Emitters: A New Business Logic" is included in chapter 3. Lead Authors:

David Lubin, Constellation Research and Technology; John Moorhead, BSD Consulting; Timothy Nixon, Thomson Reuters

The authors would like to thank and acknowledge the important contributions of Chris Mangieri, Dan Esty and Jay Emerson of Yale University and Constellation Research and Technology.

Important data and analytics support was provided by Frank Schilder, Thomson Reuters Research & Development, Adam Baron from Thomson Reuters Content Analytics, and Ian van der Vlugt from CDP.

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The 1 Gigaton Coalition would like to thank and acknowledge the invaluable assistance of REN21, namely: Hannah E. Murdock for research coordination, and Linh H. Nguyen for research support.

DESIGN AND LAYOUT

Weeks.de Webeagentur GmbH

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FOREWORD



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Even if the pledges in the Paris Agreement on Climate Change are implemented, we will still not reduce greenhouse gas emissions enough to meet the goals. The UN Environment Emissions Gap Report 2017 states that for the 2°C goal, this shortfall could be 11 to 13.5 gigatonnes of carbon dioxide equivalent. For the 1.5°C goal, it could be as much as 16 to 19 gigatonnes. We urgently need more ambitious action to close these gaps. So, this latest 1 Gigaton Coalition Report helps to focus those efforts by quantifying the progress secured through renewable energy and energy efficiency.

Electricity touches almost every aspect of our lives, yet nearly a quarter of the population still lacks access to safe, clean and affordable energy. Around the world, people continue to seek less polluting options for everyday needs like lighting, heating, water, cooking and sanitation. It should be no surprise then that renewable power capacity is growing faster than all fossil fuels combined, with a record increase of about 9% from 2015 to 2016. Particularly, when bi-products include better health, education, security and economic growth.

Take cities, which are responsible for 75% of global greenhouse gas emissions. They can also be a big part of the solution, by adopting to energy efficient buildings, electric transport, cycle schemes and waste conversion. For example, in New Delhi, India, the health of local communities is severely affected by growing mountains of waste being dumped in open spaces. The city and private sector are tackling this by investing in waste-to-energy-plants. These reduce toxic emissions and transform waste into electricity. The plant's community center offers employment and artisan training to about 200 local women. For Badru Nisha, this income has enabled her to save 70,000 rupees (US \$1,100) and build a house for relatives in Bihar state. This program helps women build their skills and confidence, and provides them with some financial security and independence. This is just one of many stories inspiring local governments, mayors, businesses and civil society to join forces for significant environmental, economic and public health benefits.

This report comes at a critical moment to support the growing number of non-state actors showing leadership to deliver the Paris Agreement. We hope it will motivate donors, initiatives and countries to build on their achievements, while inspiring more public and private sector stakeholders to join this global effort.

KEY FINDINGS

- **INTERNATIONALLY SUPPORTED RENEWABLE ENERGY AND ENERGY EFFICIENCY PROJECTS** implemented in developing countries between 2005 and 2016 are projected to reduce greenhouse gas emissions by 0.6 Gigatons of carbon dioxide (GtCO₂) annually in 2020. When scaled up using international climate financing commitments, these efforts could deliver 1.4 GtCO₂ in annual reductions by 2020.
- **INTERNATIONAL SUPPORT FOR INVESTMENTS IN RENEWABLE ENERGY AND ENERGY EFFICIENCY IS VITAL FOR DECARBONIZATION**, as this support provides key resources and creates enabling environments in regions critical to the global climate future. International assistance accounts for only 10% of all global renewable energy and energy efficiency activities, yet it has extensive impact for future climate mitigation.
- **DATA AVAILABILITY AND INFORMATION SHARING REMAIN A PERENNIAL CHALLENGE**, one that is preventing countries and supporting organizations from systematically evaluating their work's impact, although renewable energy and energy efficiency projects and policies are growing in developing countries. The 1 Gigaton Coalition has developed a database of about 600 internationally supported projects implemented in developing countries between 2005 and 2016.
- **EVALUATING PROJECTS, POLICIES, AND SECTORS' COMPATIBILITY WITH GLOBAL 1.5°C AND 2°C CLIMATE GOALS IS ESSENTIAL TO LINK ACTIONS WITH LONG-TERM OBJECTIVES**. This new method would enable bilateral and multilateral development organizations to measure the long-term impacts of supported projects.
- **NON-STATE AND SUBNATIONAL ACTORS HAVE TAKEN ON A LEADING ROLE IN SCALING UP CLIMATE ACTION**. The case studies in this report show that low-carbon forms of development – particularly city-based public private partnerships – generate multiple co-benefits. These include improved environmental and human health, economic stimulus and employment creation, enhanced gender equality, and other societal gains that support the 2030 Agenda for Sustainable Development.

EXECUTIVE SUMMARY

Developing countries are achieving low-cost emissions reductions through renewable energy (RE) and energy efficiency (EE) projects and initiatives. The focus of this report is to evaluate the impact of these projects in terms of measurable greenhouse gas emissions' reductions to help close the emissions gap needed to meet the 2°C climate goal.

Greenhouse gas (GHG) emissions reductions created by a sample of 273 internationally supported RE and EE projects in developing countries implemented between 2005 and 2016 amount to approximately 0.3 gigatons of carbon dioxide (GtCO₂) annually by 2020. Of the analysed 273 projects, 197 are RE, 62 are EE, and 14 are both RE and EE. These efforts reduce emissions by displacing fossil fuel energy production with clean energy technologies and by conserving energy in industry, buildings, and transportation. The analysed sample's RE projects contribute approximately 0.084 GtCO₂, EE projects contribute 0.113 GtCO₂ and RE/EE projects contribute 0.059 GtCO₂ to the total emissions reductions. These projects received direct foreign support totaling US \$32 billion. This analysis builds upon the second 1 Gt Coalition report, which examined data from 224 projects (see Annex I for more details).

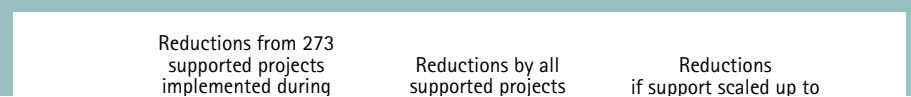
Reductions in GHG emissions resulting from all internationally supported RE and EE projects in developing countries implemented between 2005 and 2016 could be 0.6 GtCO₂ per year in 2020. This estimate is determined by scaling up the analysed sample's emissions reductions to a global level using the total bilateral and multilateral support for RE and EE from 2005 to 2016 (US \$76 billion). These international investments create crucial enabling conditions in developing countries and emerging economies, where there are significant barriers to private RE and EE investment.

GHG emissions reductions from internationally supported RE and

Assessing an initiative's emissions mitigation impact has inherent drawbacks that must be overcome in order to evaluate a project, policy, or sector in light of international climate goals. Emissions reductions estimates, even when accurate, do not explain whether the described outcomes are compatible with global climate goals. This report takes steps to overcome this challenge, by developing criteria intended to assess a sector's compatibility with global climate goals. It also shows how these compatibility conditions can be applied to RE and EE projects, outlining a conceptual framework for future analysis.

Criteria for sector-level compatibility with 1.5°C and 2°C goals were developed to evaluate emission savings from projects (Tables 3.1 – 3.15). The sectoral criteria are displayed in compatibility tables, with each table listing 1.5°C- and 2°C-compatibility conditions drawn largely from the International Energy Agency's (IEA) Energy Technology Perspectives (ETP) 2017 report and its 2°C Scenario (2DS) and Beyond 2°C Scenario (B2DS). Schematics (Figures 7 – 10) demonstrate how the sectoral compatibility criteria could be applied at the project, firm, or policy level to identify projects considered 1.5°C- or 2°C-compatible. Two actual projects, selected from this report's RE and EE database, are used as proofs of concept. Information sharing and data availability prove to be key challenges to broadening the application of this approach.

Figure ES: Emission reduction from renewable energy and energy efficiency projects by 2020



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