# INNOVATION POLICY FOR A CHANGING CLIMATE

SUPPORTING GREEN TECHNOLOGY ENTREPRENEURS


June 2015

## PRESENTATION OBJECTIVES

- Objectives of this presentation:
  1. Explain role of innovation policy for climate change
  2. Explain different policy instruments that can be leveraged
  3. Give overview of some WBG examples in this area

## PRESENTATION OUTLINE

- Part I. Context
  - 1.1 Impacts of a changing climate: the climate imperative
  - 1.2 From (climate) challenge to (development) opportunity
- Part II. Innovation policy for a changing climate
  - 2.1 Why?
  - 2.2 What role/ what instruments?
- Part III – Examples

## PART I - Context

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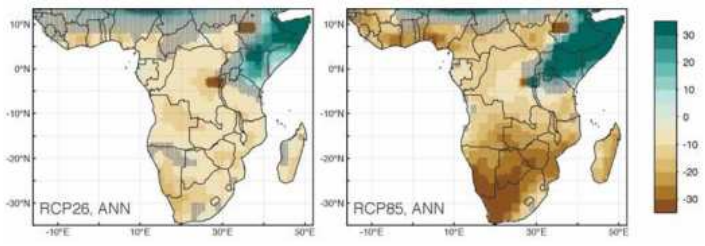
## 1.1 Impacts of a changing climate: the climate imperative

**5 effects will lead to possibly dramatic impacts on almost all SD goals:**

- **Unusual and unprecedented heat extremes**: far more frequent occurrence & coverage
- **Rainfall regime changes and water availability**: pressure on water resources is expected to increase significantly
- **Agricultural yields and nutritional quality**: Significant crop yield impacts are already being felt with strong repercussions on food security & likely negative impact on growth and poverty reduction
- **Sea level rise** has been occurring more rapidly than previously thought
- **Marine ecosystems** (ocean acidification + heat)

## 1.1 Impacts of a changing climate: the climate imperative

- The changing climate will have its **largest impacts on developing countries**, with poor populations in developing countries particularly hard hit
- Many ongoing efforts to assist developing countries to mitigate and adapt to climate change.
- Much of this thrust currently involves transfer of technologies from more advanced countries, but developing countries are quickly catching up



## 1.2 Turning a (climate) challenge into a (development) opportunity

- A changing climate also represents and opportunity for developing countries to **build local green industries** that can drive sustainable economic growth and environmental benefits
- $6.4 trillion market 'opportunity' for green technologies* in developing countries, $4.1 tn when excluding India, China, Russia and MIC Europe, **of which $1tn for SMEs** over the next decade
- **"Green technologies"** include:
  - Renewable energy technologies
  - Waste, water and sanitation
  - Transport …
- Opportunities for existing tech adaptation

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* By green technologies, we mean the range of technologies that provide climate mitigation or adaptation benefits or positive environmental benefits

## PART II - Innovation policy for a changing climate

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## 2.1 WHY A POLICY ROLE?

- **Market failures:**
  - Presence of systemic demand and supply side market failures : market does not function optimally, particularly in this "**global public good**" sphere
- **High Risk:**
  - Green technology is 'riskier' form of innovation than others (longer lead times, higher capital investments, uncertain payoffs)
  - Premium in developing countries, with relative isolation of entrant firms, lack of critical mass of support

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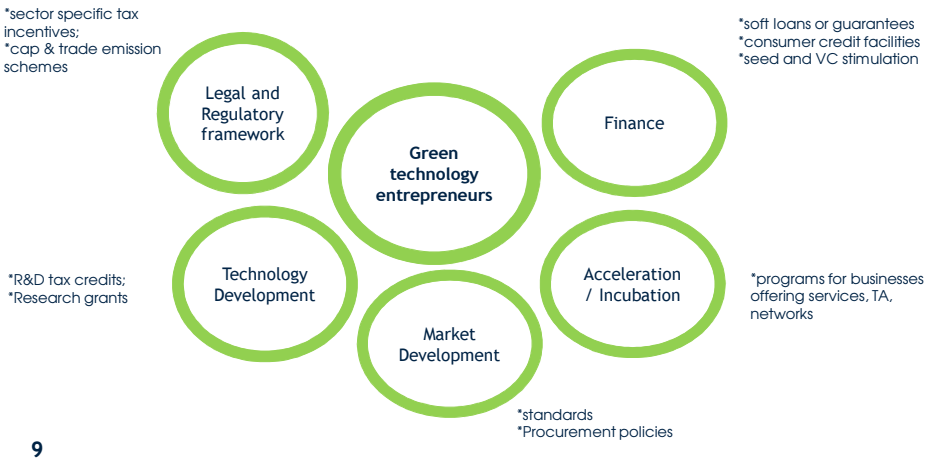
## 2.2 Key areas where Policy support is needed – some ex.

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## 2.3 Changing innovation paradigm – "open innovation"

| | Closed innovation | Open innovation |
|---|---|---|
| **Corporate ethos** | Only invented here | Best from anywhere |
| **Role of customers** | Passive recipients | Active co-innovators |
| **Core competency** | Vertically-integrated product and service design | Competitive differentiation and collaborative partner management |
| **Scope** | Economies of scale - with products and services built around core competencies | 'Economies of scope' - with individualized solutions optimizing end customer value |
| **Attitude towards IP** | Own and protect | Trade and commercialize |
| **Role of R&D and operations** | Design, develop and market in-house inventions | Optimize performance of owned assets through both in-house and external development: do enough R&D internally to recognize significant external R&D |

Source: Adapted from Radjou (2004) Innovation Networks

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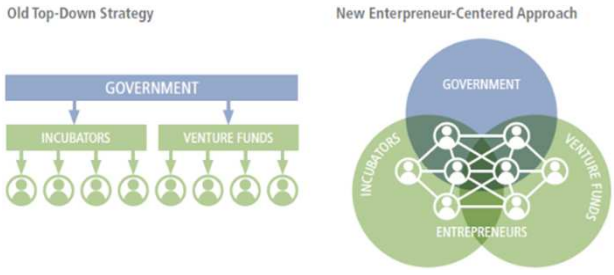
## 2.3 Changing innovation policy support

- Further to more traditional innovation policy instruments and support, promoting different types of connections between entrepreneurs (locally and internationally) critical

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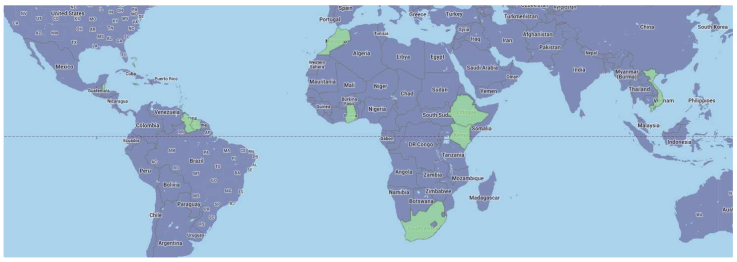
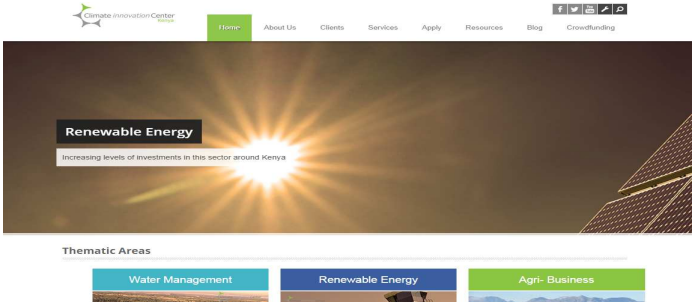
## 3.1 Climate Technology Program

- CTP objective is to accelerate the growth of local green technology sectors that contribute to climate change mitigation and adaptation.
- Business lines are designed to connect, share knowledge with, learn from, and provide services to the support local climate technology growth-oriented SMEs and startups (henceforth "ventures").
- Developing and testing new models of support that help catalyze climate technology ecosystems and clusters.



## 3.2 Kenya Climate Innovation Center

- Worked with over 110 clients, created 821 jobs, mitigated 94,307 tons of CO2
- Ranked at the top of the 2014 edition of the prestigious University Business Incubators (UBI) Index. KCIC was named 'Most Promising Business Incubator' among all the institutions participating in Africa
- Launch of the Kenya Climate Venture Facility (KCVF)

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## 3.3 Other examples of how the WBG engages


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