

**I4CE**

INSTITUTE FOR  
CLIMATE  
ECONOMICS

Une initiative de la Caisse des Dépôts et  
de l'Agence Française de Développement

DECENTRALIZED ELECTRIFICATION  
AND DEVELOPMENT

# UNLOCKING FINANCE FOR DECENTRALISED ENERGY ACCESS: prospects with the Paris Agreement

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# I4CE – Institute for Climate Economics

3 research areas addressing the issues faced by actors involved in the energy and climate transition



## INDUSTRY, ENERGY AND CLIMATE

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Understanding policies for the low-carbon transition in the industry and energy sectors.



## TERRITORIES AND CLIMATE

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Identifying and analyzing courses of action in the fight against climate change in the agriculture and forestry sectors as well as urban areas.

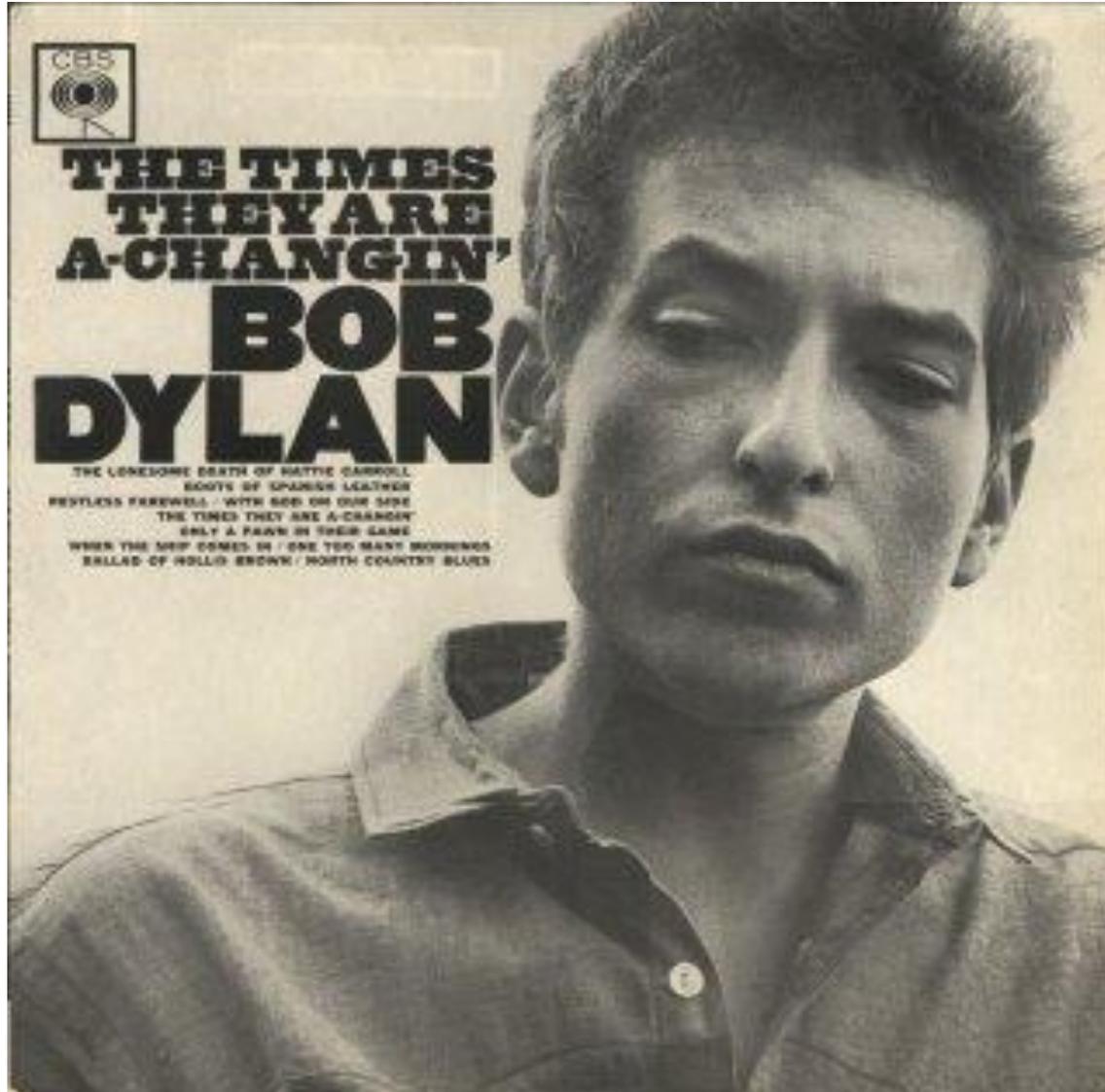


## FINANCE, INVESTMENT AND CLIMATE

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Analyzing the mainstreaming of climate change into financial decision-making by public and private entities.

# Bob Dylan was right



# A diplomatic success



# A revolutionary trypsic



## An international agreement in a multilateral framework

- A long-term Agreement
- A COP Decision, immediately applicable



## National policies

- *Nationally Determined Contributions (NDCs)*



## An « Action Agenda »

- Local governments
- Corporates
- NGOs
- etc.

# Aligning climate, development and finance



1. **Limit** global warming well below **2°C** while aiming at bringing it to 1.5° with an aim to **reach** global peaking of GHG emissions as soon as possible” and **zero-net emissions** by the second half of this century.

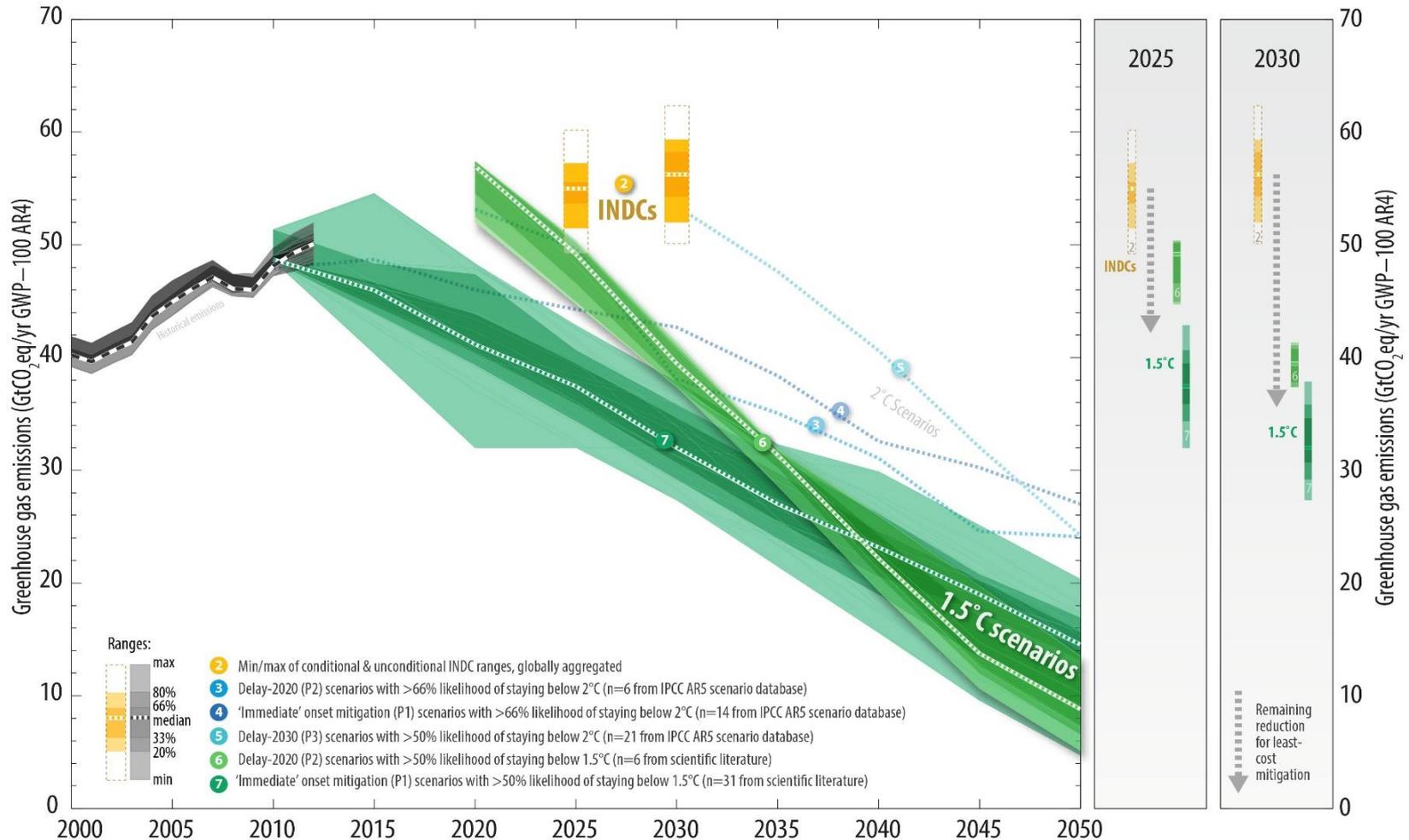


2. **Increasing** the ability to adapt to the adverse impacts of climate change by **promoting** resilience and low-carbon development, in a manner that does not threaten **food production**;



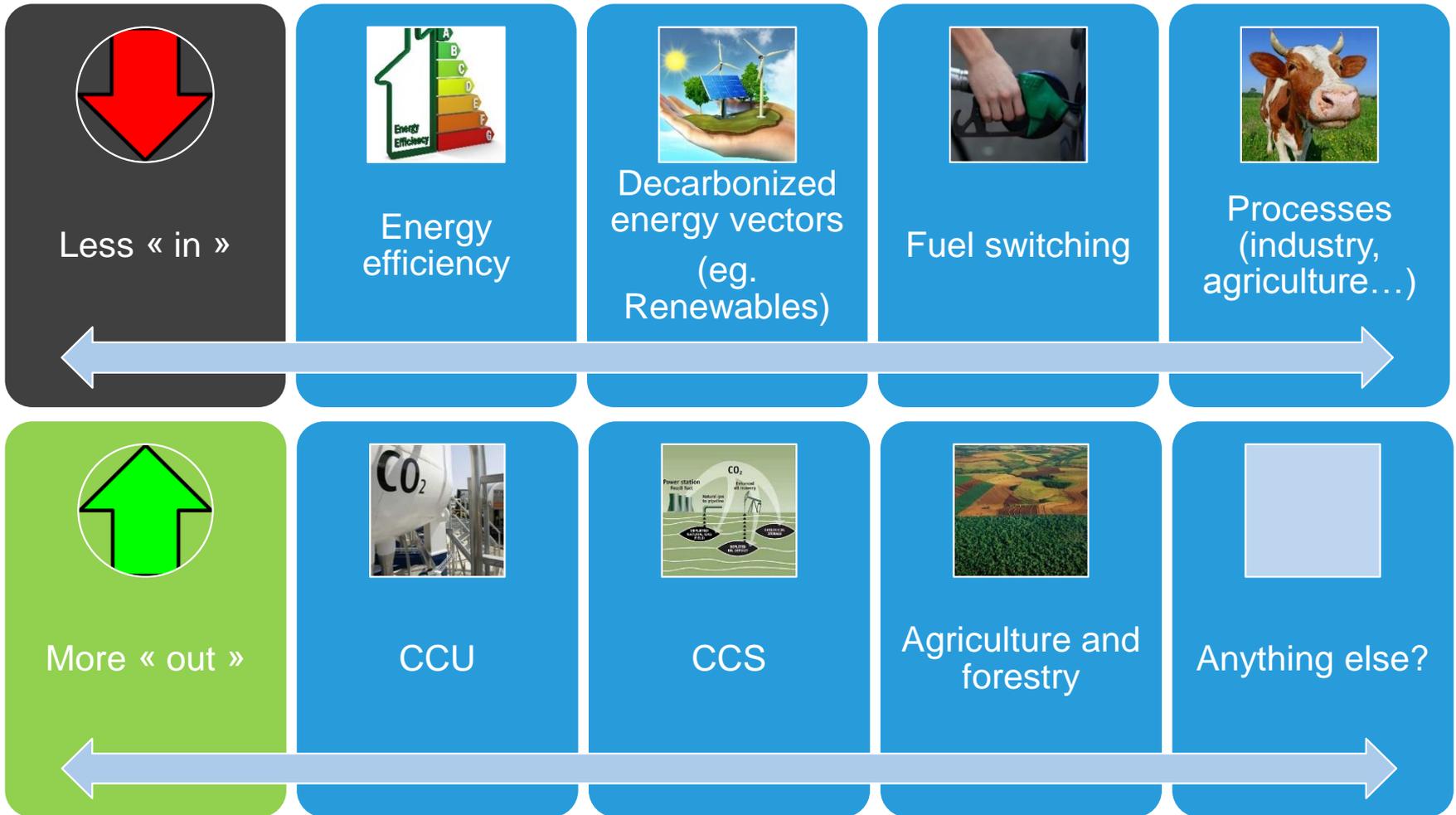
3. **Making** financial flows **“consistent”** with low-carbon climate-resilient development.

# Towards a 'zero net emissions' world

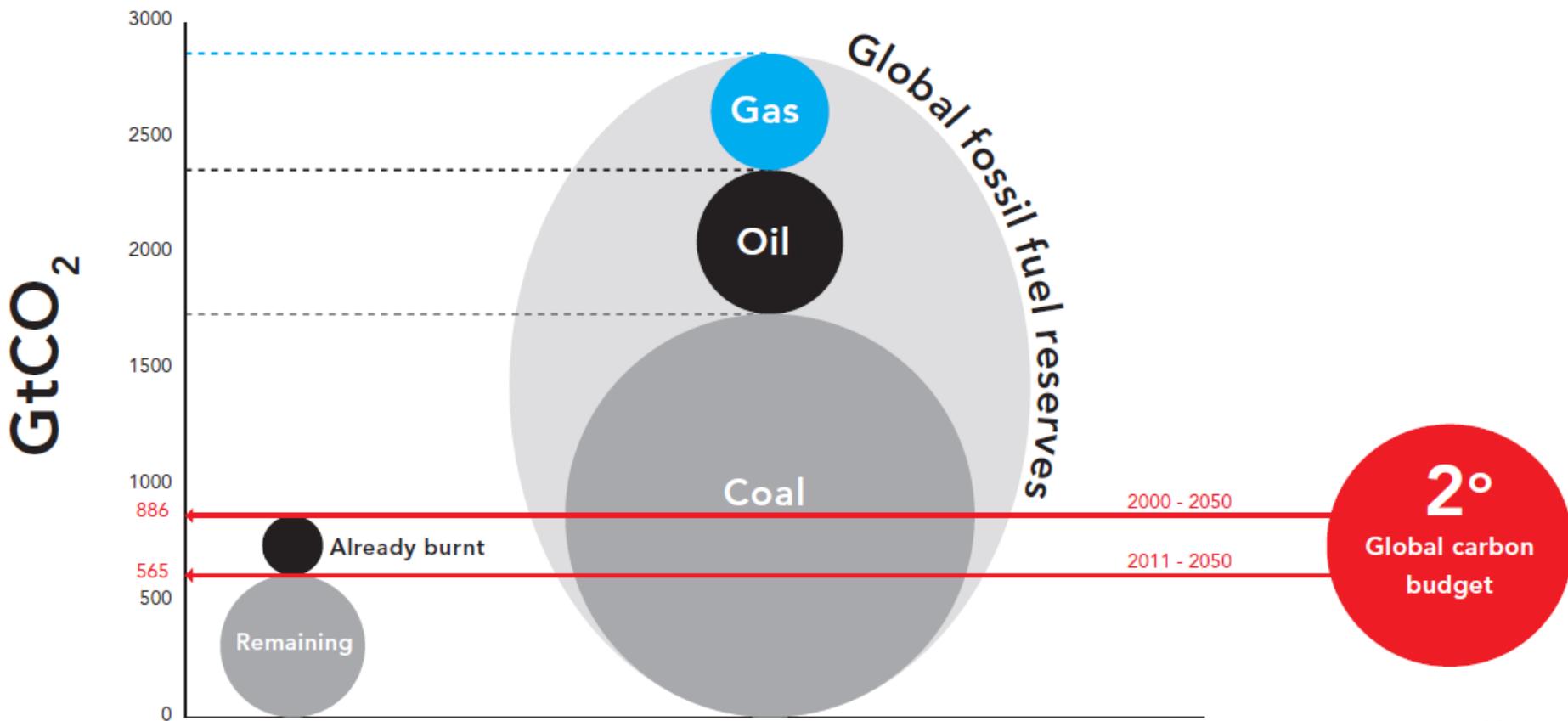


Source: UNFCCC, 2015

# How to reach 'zero net emissions' ?



# Leaving carbon underground?

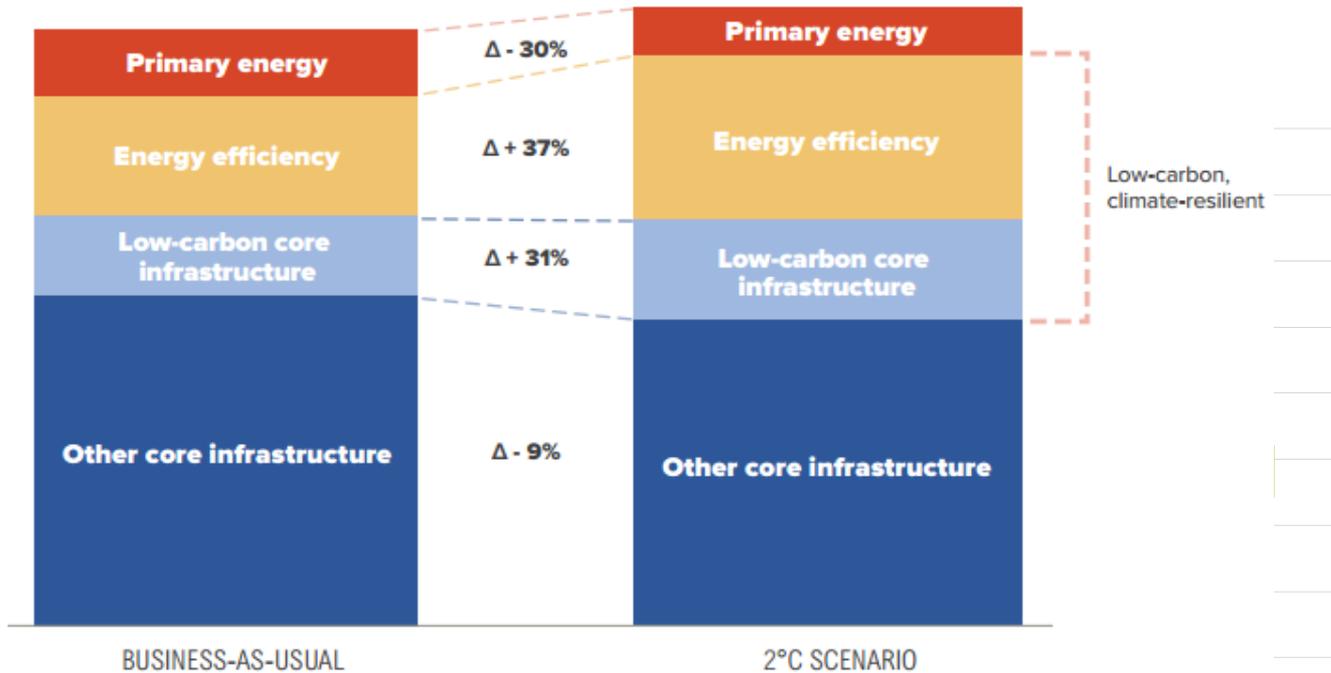


Source : Carbon Tracker Initiative, 2014

ALIGNING FINANCIAL FLOWS

# REDIRECTING 5,000 G\$ per year of public & private investment

Change in infrastructure spending required for a 2°C scenario  
 (percentage change in expenditure over 2015-2030 compared to Business-as-usual)



- Primary energy: extraction of oil, gas and coal
- Energy efficiency: buildings, energy and transportation
- Low-carbon core infrastructure: renewable energy, nuclear, CCS, low-carbon transport (e.g. light rail and Bus Rapid Transit systems), climate-proofed water and sanitation including some adaptation infrastructure (e.g. sea walls and flood protection)
- Other core infrastructure: standard water/sanitation, high-carbon transport (e.g. roads), energy production, and telecommunications

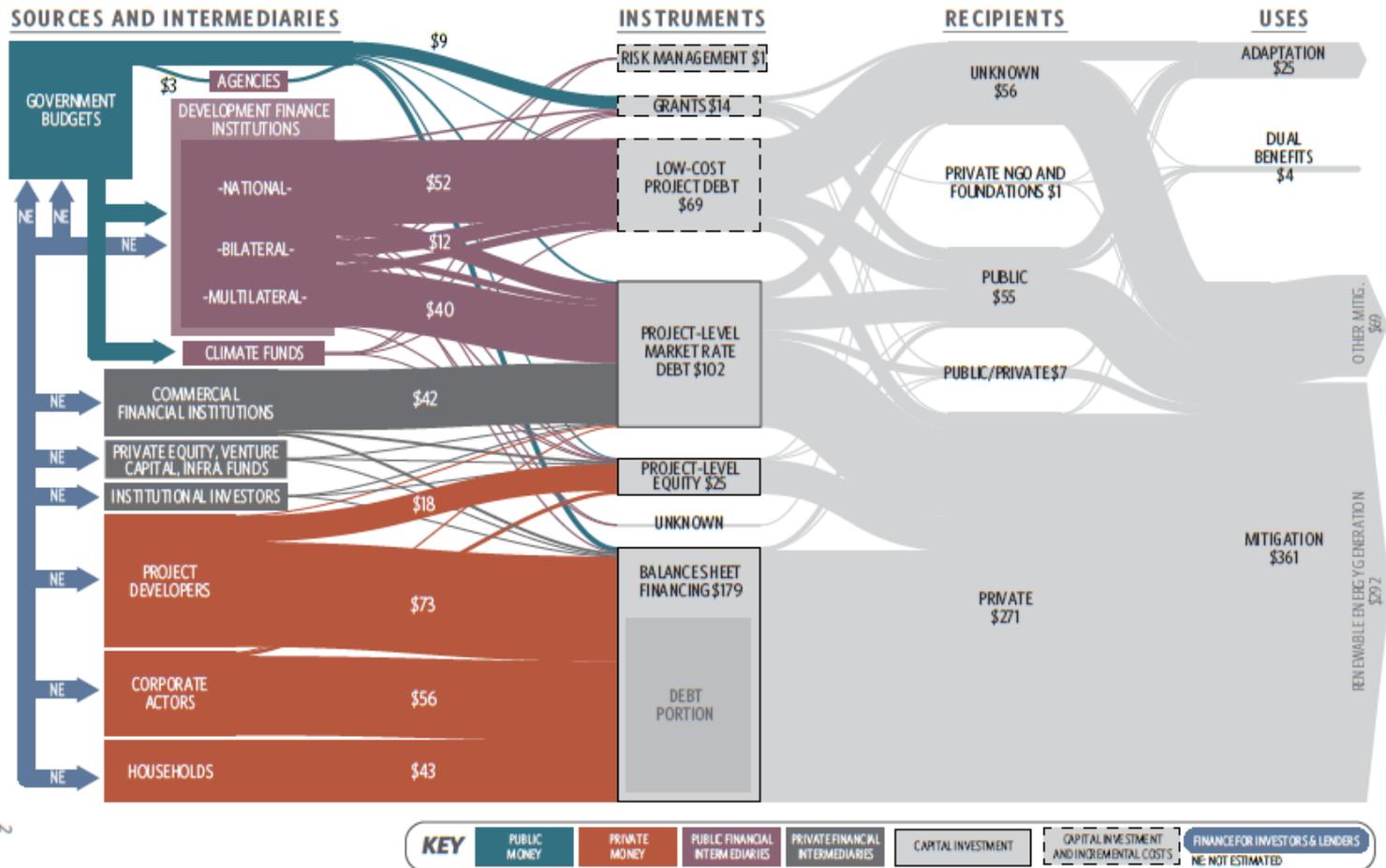
Source: *New Climate Economy*, 2016

# Above all a question of redirecting...

Figure 2. The Global Landscape of Climate Finance 2015

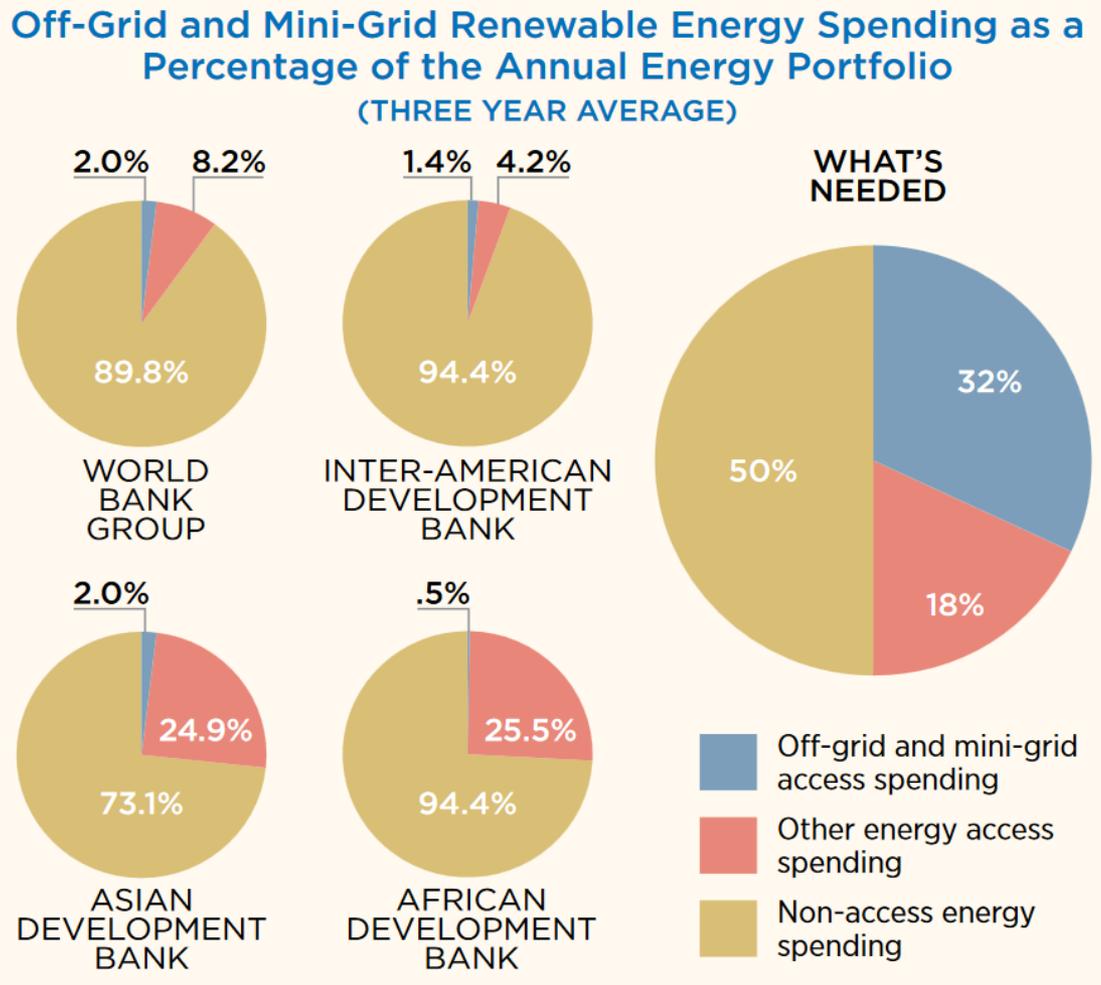
## GLOBAL LANDSCAPE OF CLIMATE FINANCE 2015 **USD 391** BN TOTAL CLIMATE POLICY INITIATIVE

*Landscape of Climate Finance 2015 illustrates climate finance flows along their life cycle for the latest year available, mostly 2014, in USD billions*



# No MDB is aligning its investment on needs for Off-grid and Mini-Grid

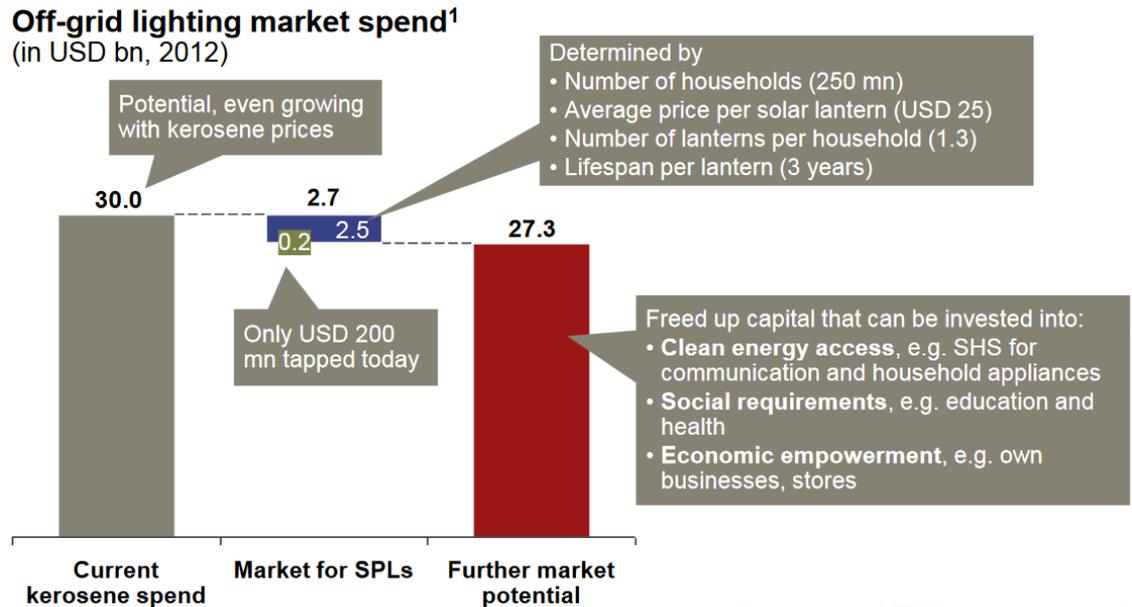
- Public funding through Multilateral Development Banks (MDBs) remains well below expected levels for off-grid energy access: **MDBs spent less than 2% of their energy budget on decentralized electrification** between 2013 and 2015 instead of the 32% preconized by the IEA in its “Energy for all” case.



Source: Sierra Club and Oil Change International, 2016

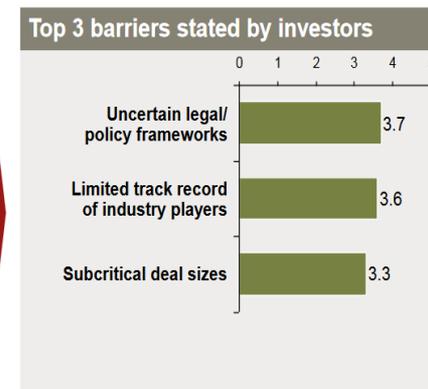
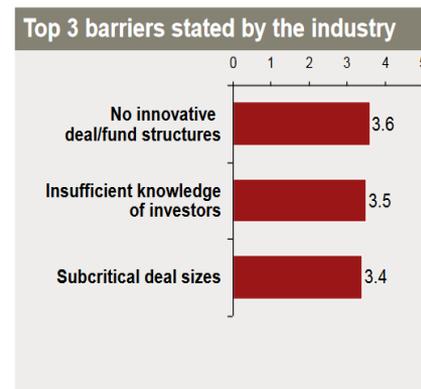
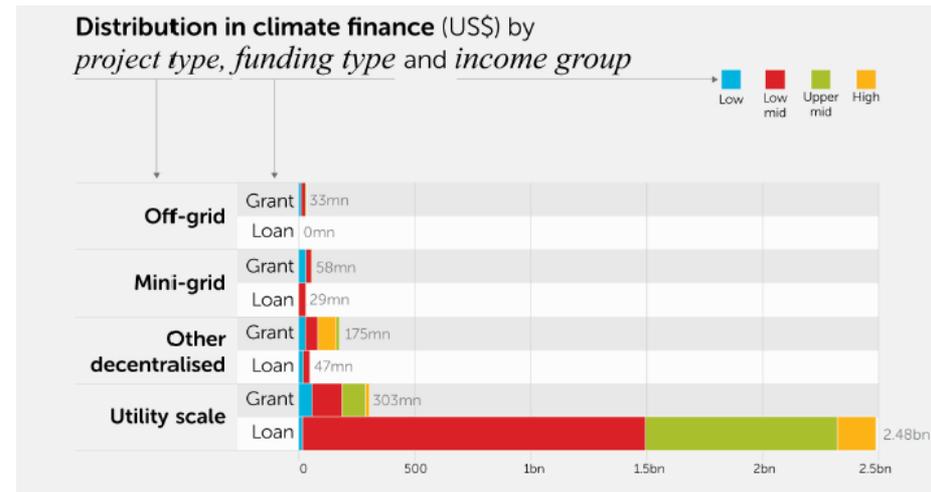
# Redirecting financial flows: unlocking opportunities

- **Unlocking finance from black finance:** Off-grid solar lighting only could cut 25bn liters of kerosene burning annually throughout the world and free an additional USD 27bn for other productive and/or mitigation uses.
- **Aligning Climate Finance to needs:** Energy represents 40% of the USD 14bn already granted on behalf of the 100bn pledge, yet decentralized energy makes up only 3.4% of these 14bn.



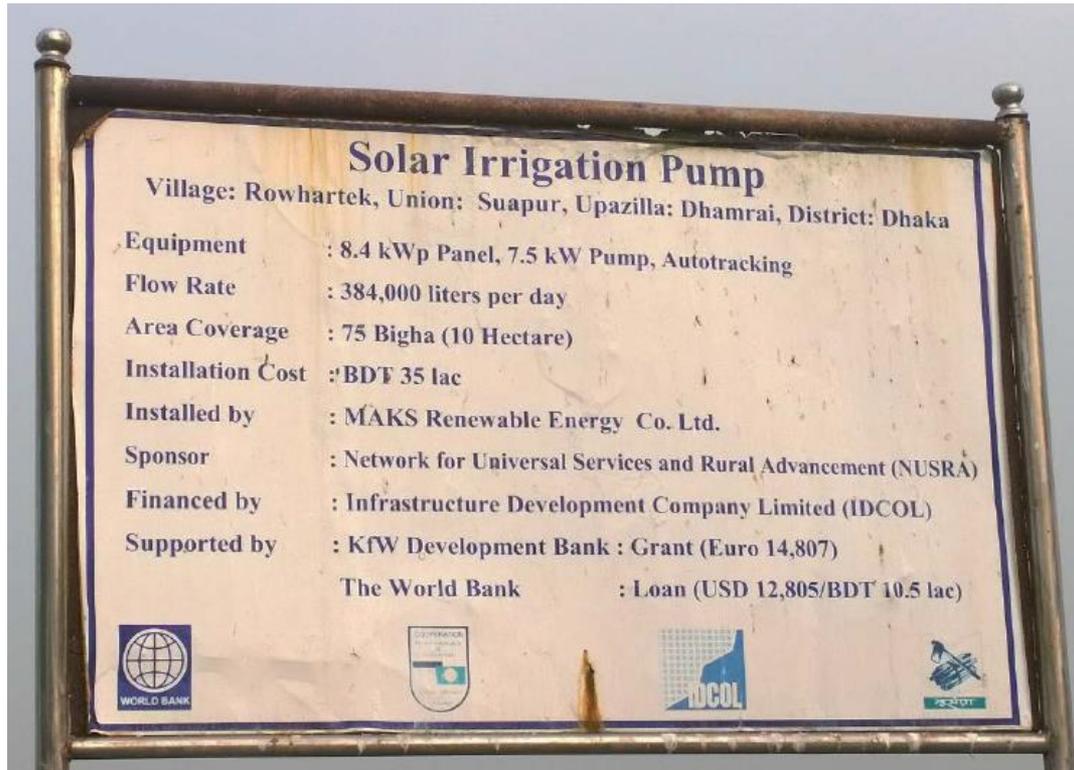
# Redirecting financial flows: managing barriers

- **Preference for loans versus grants:** grant-based climate finance is limited and utility-scale projects with established business models are often preferred to off-grid startups for loans.
- **Bias towards large projects:** the main public climate donors) are more experienced with channeling funds towards large projects than numerous small-scale projects.
- **Possibly inadequate fund priorities:** high weight given by climate funds to e.g. mitigation impact and leveraging co-finance => Assessment is costly for low-income countries / organizations...



Source: Rai et al., 2016

# Targetting small-scale projects: 4 million homes in 5 years in Bangladesh



- 150 million citizens
- Nearly 40% off-grid
- Electricity for all by 2021
- RNW target: 10% by 2030
- Set up an *ad hoc* agency: The *Infrastructure Development Company Limited* (IDCOL)

- IDCOL: A holistic approach supporting a large range of technologies, needs and actors with a wide mixture of financial instruments
- Ability to channel large amounts of finance into lots of small-scale projects
- Supporting the whole off-grid market, not only individual projects

# Private finance solutions for off-grid solar deployment: BBOXX



- Solar home systems in Kenya, Rwanda
  - Total 35 countries covered
- Based on monthly payment plans
- **2010:** Official launch
- **2014:** \$5.2M (\$2.5M equity, \$2.7M credit lines)
- **2015:** \$15M (\$9.8M equity, \$5.3M debt)
- **2016:** \$20M investment, 350.000 customers
- **2020:** “We hope to provide energy to +20 million people”

- 2015: \$500,000 Distributed Energy Asset Receivables (DEARs) using securitization as a means of financing solar home systems in Africa, allowing to realize income up to three years earlier.
- Aim: \$2bn in the next five years
- “We are already deploying systems at the fastest rate in East Africa, at 10kWp of solar per day...”

## Take away messages

- The bulk of the financing flows towards « zero net » will be domestic and private
- Funding Off-grid energy access: a question of redirecting financial flows ...
- But also some obstacles to overcome: economic and financial risks and transaction costs
- Climate benefits and co-benefits need to be better promoted.
- Finance won't do it all, but nothing will be achieved without finance
- A quiet revolution: Bob Dylan was right

**“A vos questions !”**

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