

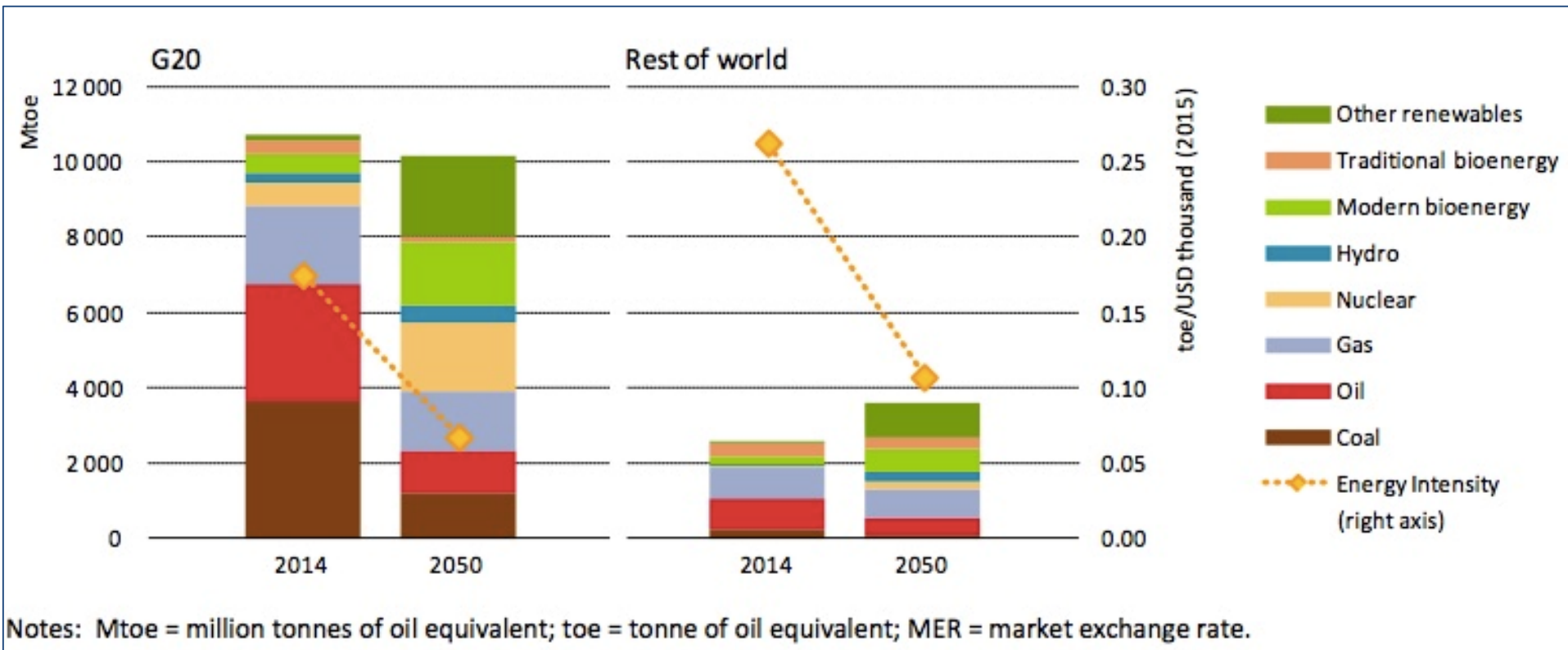
Key findings and policy recommendations

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The background features a stylized illustration of energy infrastructure. On the left, there are two wind turbines, one blue and one green. In the center, there is a yellow oil pumpjack. On the right, there are two orange cooling towers. The background is light blue with faint white lines suggesting energy flow or connections.

CSTD 2017–2018 Inter-Sessional Panel: The role of science, technology and innovation to increase substantially the share of renewable energy by 2030
Geneva, 6th November 2017

Renewable energy potential

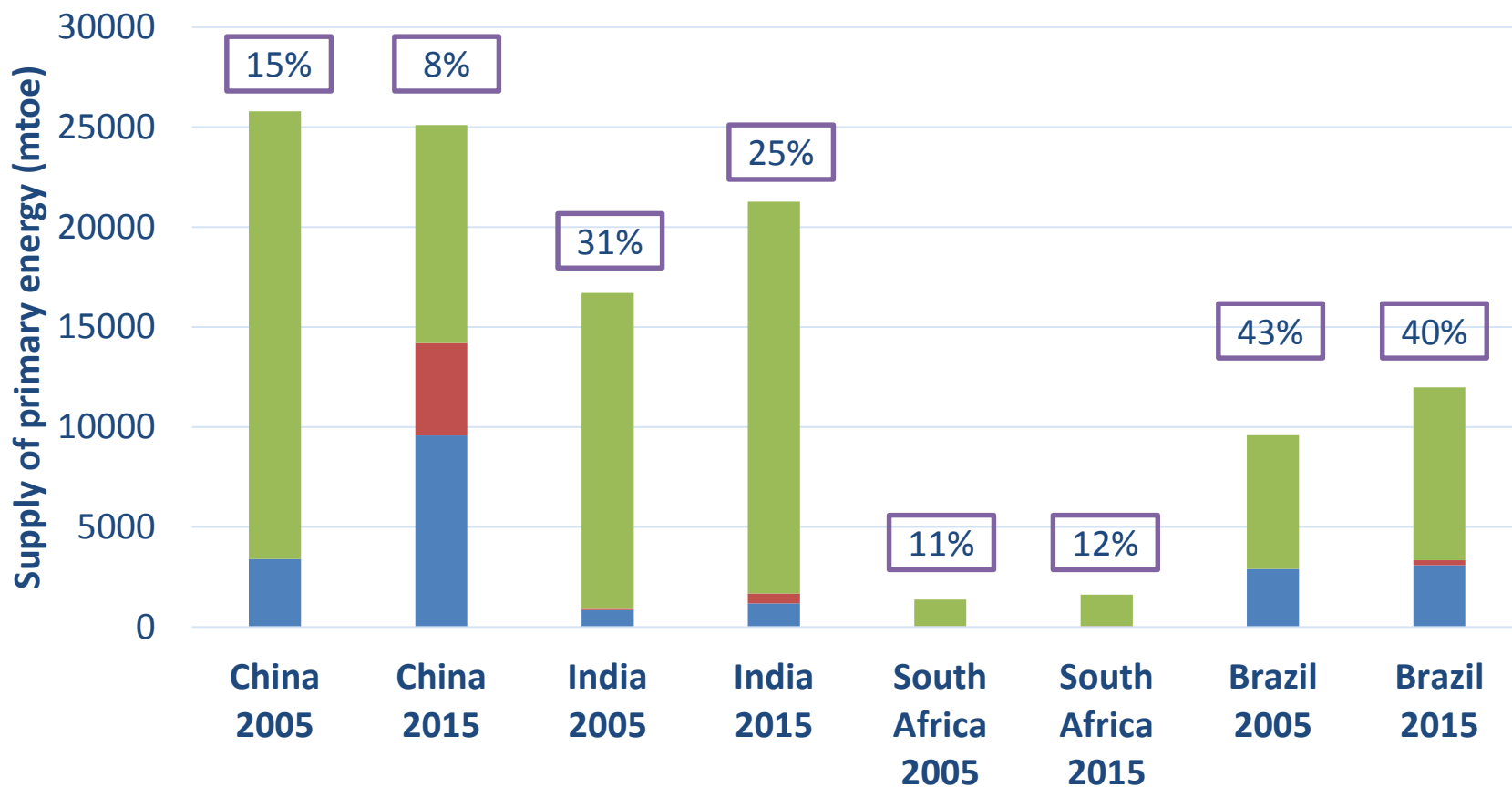


- IRENA 'REmap scenario' is more ambitious: two-thirds of energy from renewables by 2050

Source: IRENA and IEA, 2017

Renewable energy and the SDGs

Diverse pathways

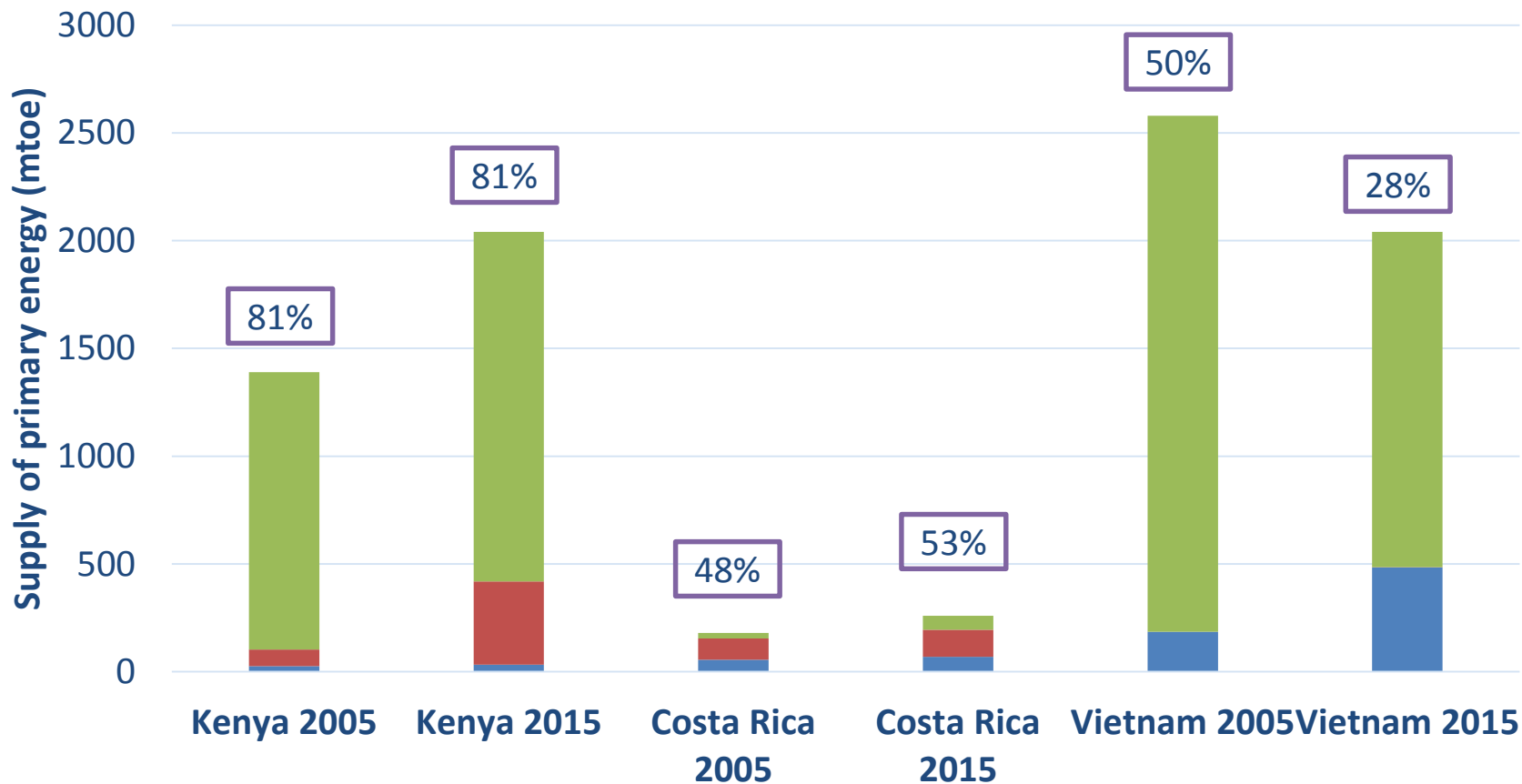


■ Hydro ■ Geothermal, wind, tidal, solar ■ Biofuels and renewable waste

□ Renewables as percentage of total energy

Renewable energy and the SDGs

Diverse pathways



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Renewable energy and the SDGs

SDG 7 + SDG 2



TARGETS	KEY INTERACTIONS	SCORE	POLICY OPTIONS
7.2 → 2.1	If not restricted to degraded lands, large-scale global production of purpose-grown energy crops could drive up food prices and so constrain the achievement of ending hunger for the poor	0/-1	Design legislation so that competition of bioenergy crops with land use for other purposes is avoided. This can be done by prioritising bioenergy production on degraded land; maximising energy production from agricultural wastes (from non-bioenergy crops), and investing in research and technologies that lead to higher crop yields
7.2 → 2.3	Bioenergy production could reinforce initiatives pursuing agricultural jobs creation and higher farm wages. Bioenergy from agricultural wastes also provides higher returns for job creation	+2	Structure policies should be designed so that they promote the creation of bioenergy-related jobs and diversified income streams for farmers, particularly for women, indigenous groups, family farmers and fishers. Policies should favour waste-to-energy projects for bioenergy
7.2, 7.3 ↔ 2.3, 2.4	Greater agricultural productivities for all types of crops, particularly bioenergy, can aid the achievement of the renewable energy target by allowing as much bioenergy to be produced on as little land as possible, thereby minimising land use competition	+2	Put in place mechanisms to manage the energy, land, fertiliser and water inputs to agriculture, thereby helping to mitigate any negative effects on the environment as well as on agricultural prices (and thus on food security)

- Positive impacts go well beyond SDG7
- Synergies with SDGs for health, poverty reduction, food, climate change
- Potential negative impacts (e.g. of bioenergy on land use) need to be managed

Policies to support renewable energy

An innovation systems perspective

Linear model of Innovation process



Source:
Global Energy
Assessment

Policies to support renewable energy

An innovation systems perspective

Linear model of Innovation process

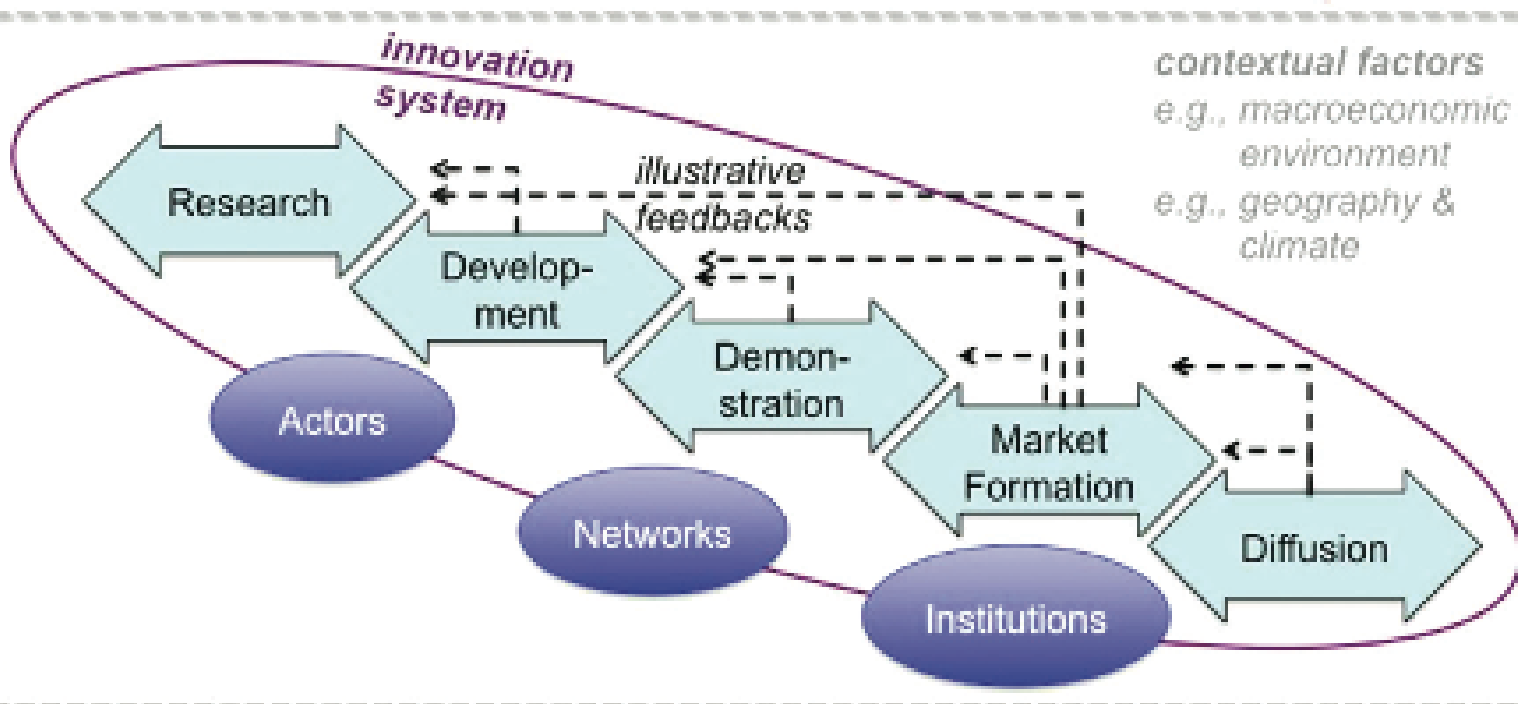


Understanding innovation:

from this

to this

Systematic representation of innovation with chain-linked model of innovation process



Source:
Global Energy
Assessment

Policies to support renewable energy

An innovation systems perspective

- Systems of innovation can be national, regional, technological and sectoral
- Innovation varies in scope and scale, e.g.
 - From incremental to radical innovation:
 - e.g. larger wind turbines to smart electricity systems
 - Social *and* technical innovation:
 - e.g. new financing models for off-grid renewables; collaborative innovation for cleaner cookstoves
- Policy mixes often required to support renewable energy innovation and deployment

Challenges and opportunities for developing countries

- Potential to build renewables into energy development plans, taking advantage of cost reductions
- Centralised renewables (grid extension) *and* small scale renewables (off grid) have important roles
- Clean cooking remains an urgent priority, taking into account lessons from past successes and failures
- Affordability remains a significant challenge: new business models can help spread upfront costs
- Need to integrate policies to support renewable energy with reforms to fossil fuel consumption subsidies

The role of international collaboration

- Technological collaborations focused on R,D&D: e.g. Mission Innovation and Alliance for Clean Cookstoves
- Collaboration to develop manufacturing capacity; installation, operations and maintenance skills
- Improved grid interconnection across borders to help integrate renewable energy at a regional level
- Policy learning and capacity building, e.g. energy strategies; policy mixes; policy instruments and their implementation

Thanks

<http://www.ukerc.ac.uk>

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