

Why liberalize environmental goods and services?

**TRAINING COURSE ON “ENVIRONMENTAL GOODS AND SERVICES
NEGOTIATIONS”**

2-3 March 2017, at United Nations Conference Centre, Bangkok, Thailand

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WTO

Outline

- Broad scope and other **characteristics of the green tech sector**, and how it contributes to environmental sustainability
- **Gains from trade in green goods and services** and the main types of **barriers** affecting that trade
- Main elements of a **coherent framework** to promote rapid diffusion and absorption of green technologies

What are we talking about?

System of Environmental-Economic Accounting (2012)

*Environmental goods and services sector (EGSS): **producers** of all environmental goods and services. Thus, all products that are produced, designed and manufactured for **purposes of environmental protection and resource management** are within scope of the EGSS.*

What are we talking about?

**Green
technologies**

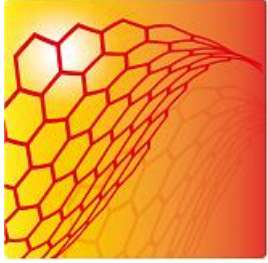
Clean tech

**Related
concepts**

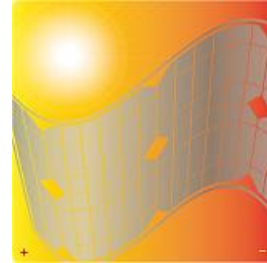
Green goods

**Eco-
innovation**

Some examples



2D materials



**Perovskite
solar cells**

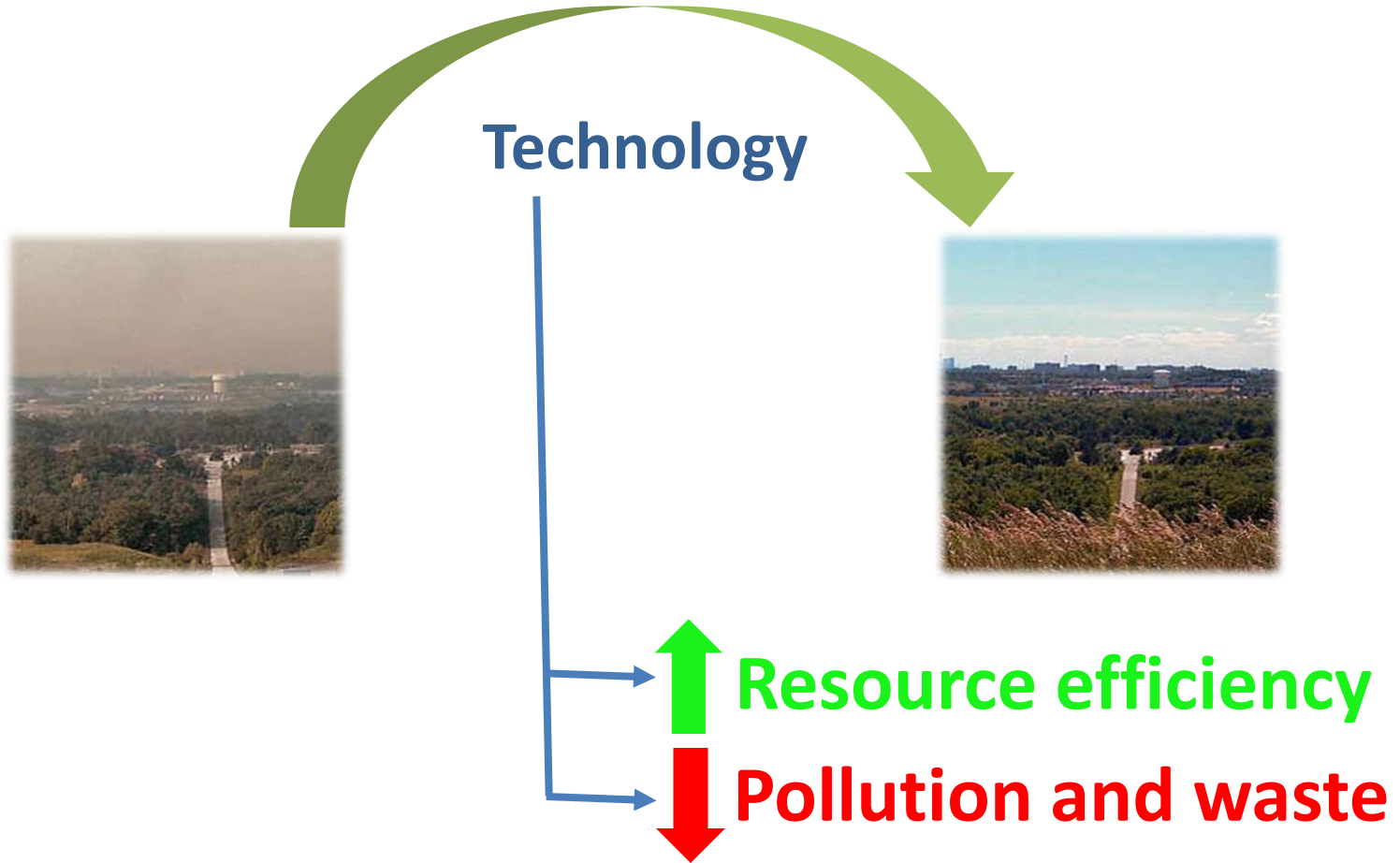


**Next generation
batteries**

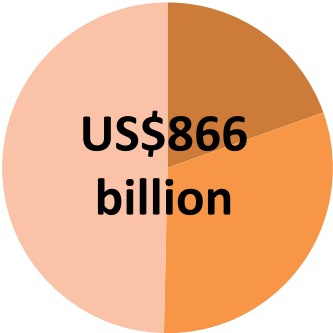


**Systems
metabolic
engineering**

Green tech: What for?

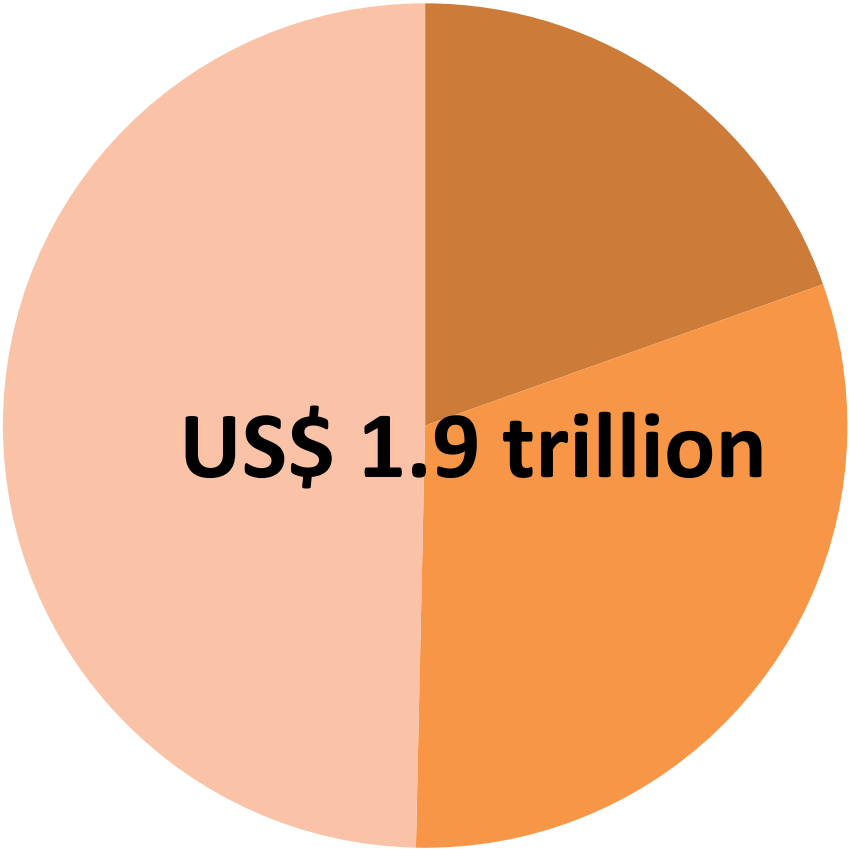


Green tech: A large and growing market



■ Equipment ■ Services ■ Resources

2011

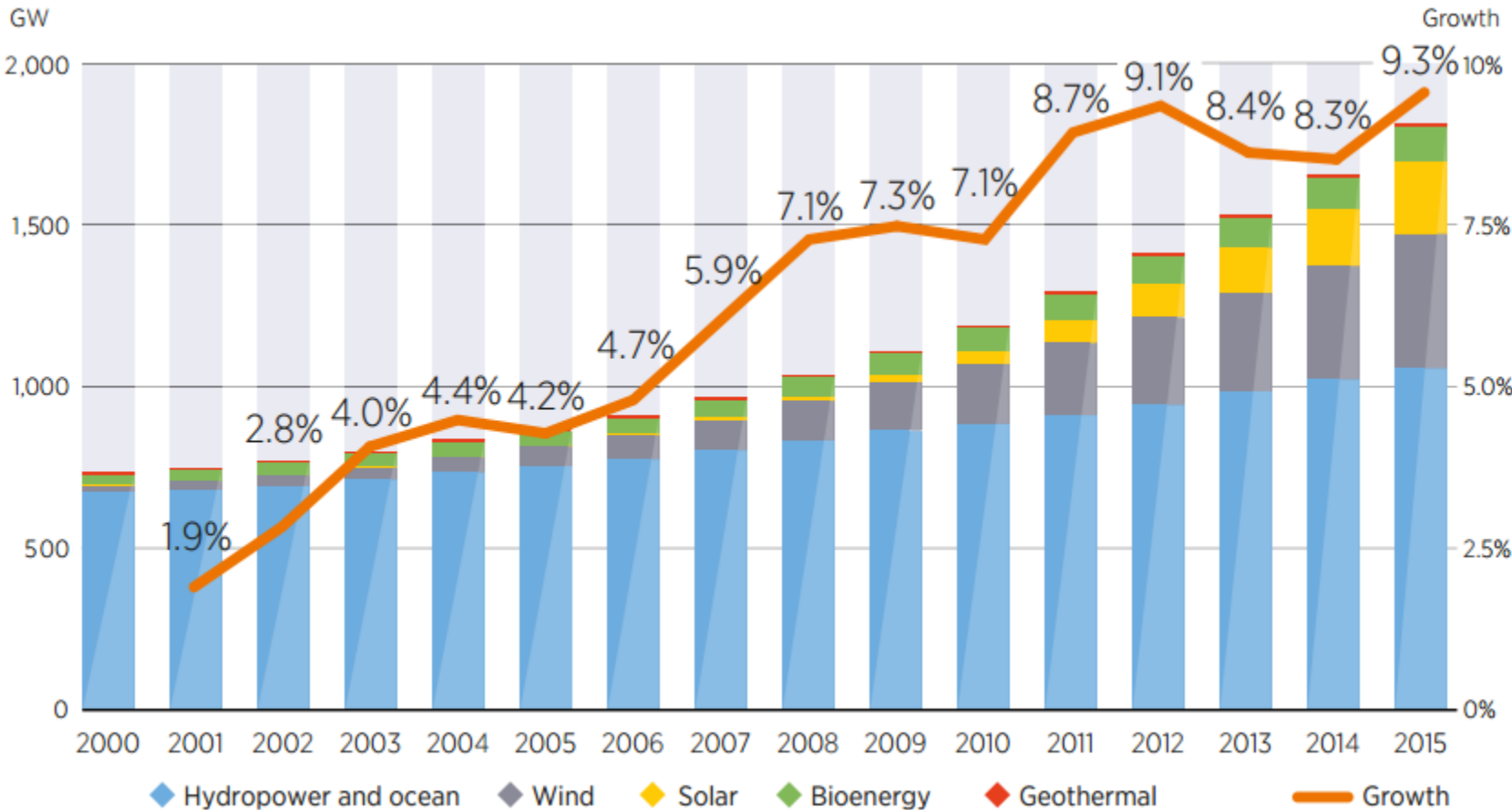


■ Equipment ■ Services ■ Resources

2020

Source: Environmental Business International (2012)

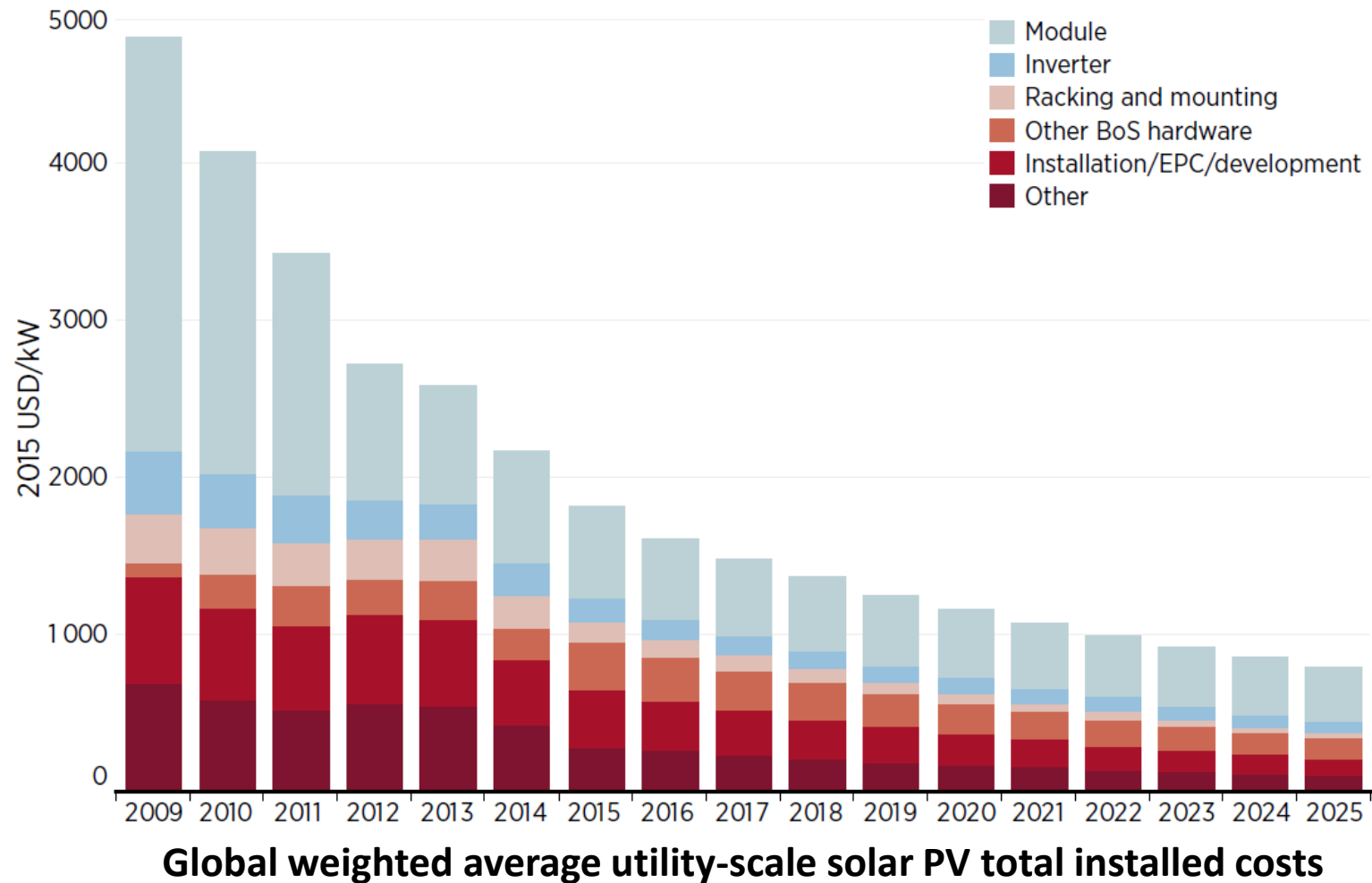
The global energy transformation



Renewable power capacity and annual growth rate, 2000-15

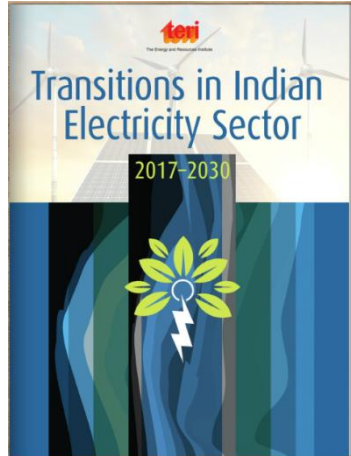
Source: IRENA (2017)

The global energy transformation



Source: IRENA (2017)

The global energy transformation



India Politics & Policy

+ Add to myFT

India optimistic of being coal-free by 2050

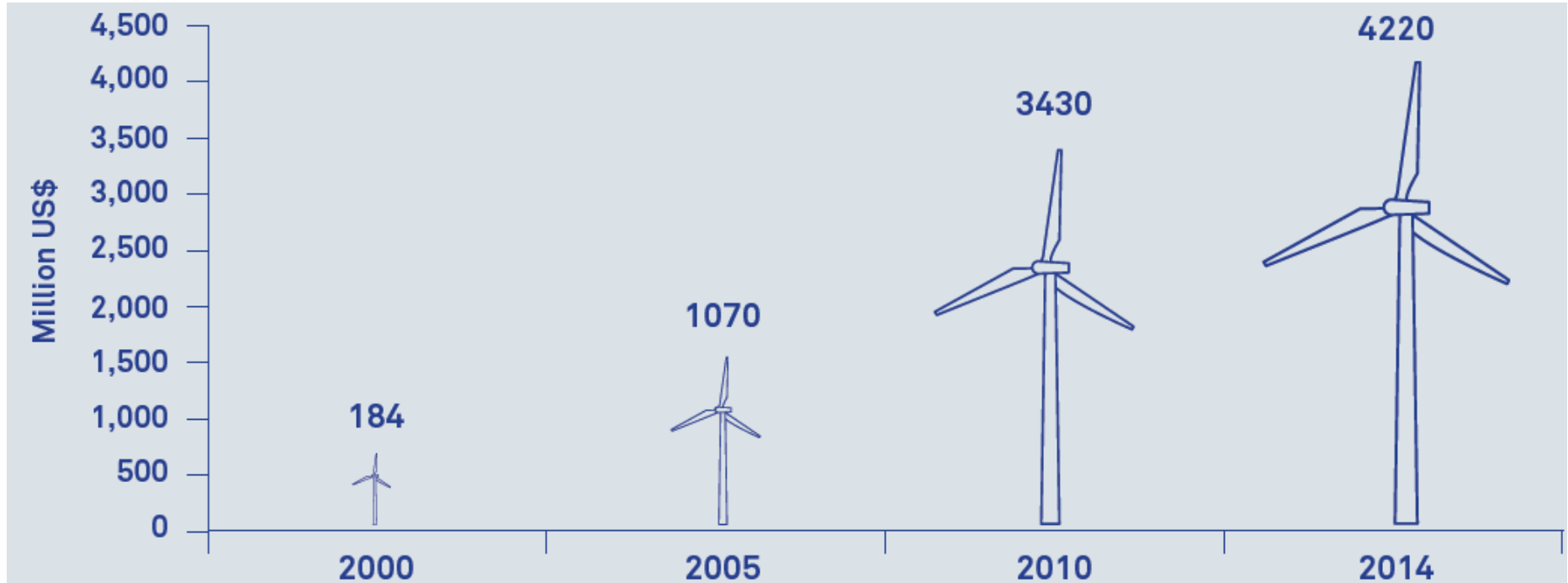
Target date for last power plant hinges on fall in renewables costs



“India will not need to build another coal power plant after 2025 if renewables continue to fall in cost at their current rate, according to a report that suggests that carbon levels could be cut significantly beyond parameters agreed at the Paris climate talks”

Source: Financial Times (12 February 2017)

Trade: A key part of the story (along with significant policy support)



World imports of wind turbines, US\$ million

Source: WTO Secretariat, based on COMTRADE data

Trade is a powerful tool for green tech diffusion

A 2007 World Bank study found that liberalizing trade in 4 key climate change technologies in 18 high carbon emitting developing countries results in huge gains in trade volumes



Wind

↑ 22.6%



Efficient
lighting

↑ 63.6%



Solar

↑ 13.5%



Clean coal

↑ 4.6%

Increase in import volumes

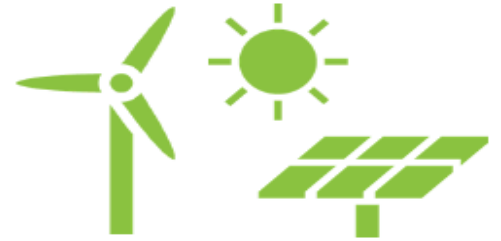
Some other findings

- Trade barriers hamper the **diffusion of patented knowledge** relating to climate mitigation
 - Dechezleprêtre et al. (2013)
- CDM projects are more likely to have a **technology transfer component** when host country tariffs are low
 - Schmid (2012)
- Trade openness increases the likelihood that countries adopt technologies **earlier in their development process**
 - Lovely and Popp (2011)
- Removing domestic and trade policy distortions affecting imports of clean coal would help **shift demand in India away from dirty coal**
 - Khanna and Zilberman (2001)

5 shared trade and environment gains



1 MORE AFFORDABLE PROTECTION
OF THE ENVIRONMENT



2 FASTER ADOPTION
OF GREEN TECHNOLOGIES



3 INCREASED INNOVATION & INVESTMENT
IN EARTH-FRIENDLY SOLUTIONS



4 OPPORTUNITIES FOR
WORKERS & ENTERPRISES



5 A CONTRIBUTION TO
SUSTAINABLE DEVELOPMENT

WHAT WILL IT TAKE TO ACHIEVE 2°C?

Delaying action to 2030 will increase the costs of decarbonisation.
It will also mean we will need to introduce new technologies more quickly.



HOW MUCH WILL DECARBONISATION COST?

Mitigation costs as share of global GDP over the 21st century¹



HOW FAST WILL WE NEED TO DECARBONISE?

Modelled rate of decarbonisation required (%/year)^{2,3}



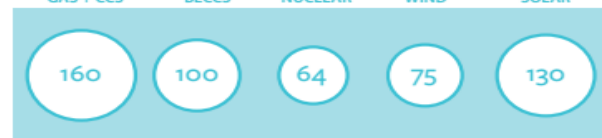
4% fastest known sustained annual rate of decarbonisation⁵

...means decarbonising two to three times as fast as if we start in 2020



HOW FAST WILL WE NEED TO DEPLOY KEY TECHNOLOGIES?

Deployment rates (up to ... GW/year)^{2,3,4}



WAITING UNTIL 2030...

...will cost 30% more⁶

...means deploying key low-carbon technologies at rates far greater than 50 GW/year: as fast as coal use increased at the start of the 21st century

2000-2010 average annual deployment rates (GW/year)



1. Using one illustrative model that fits IPCC range
2. Using a range across three models

3. Rate is for the decade following start of action

4. Deployment rates are average annual rates over the decade following the start of mitigation action

5. Maximum average annual decline over a decade, Sweden 1973-1983

6. Delaying the deployment of key technologies would further increase mitigation costs

For further information, please visit
www.avoid.uk.net/feasibility/moreinfo

AVOID2
Can we avoid dangerous climate change?

... while creating job opportunities...



2,580
person-days

PROJECT PLANNING



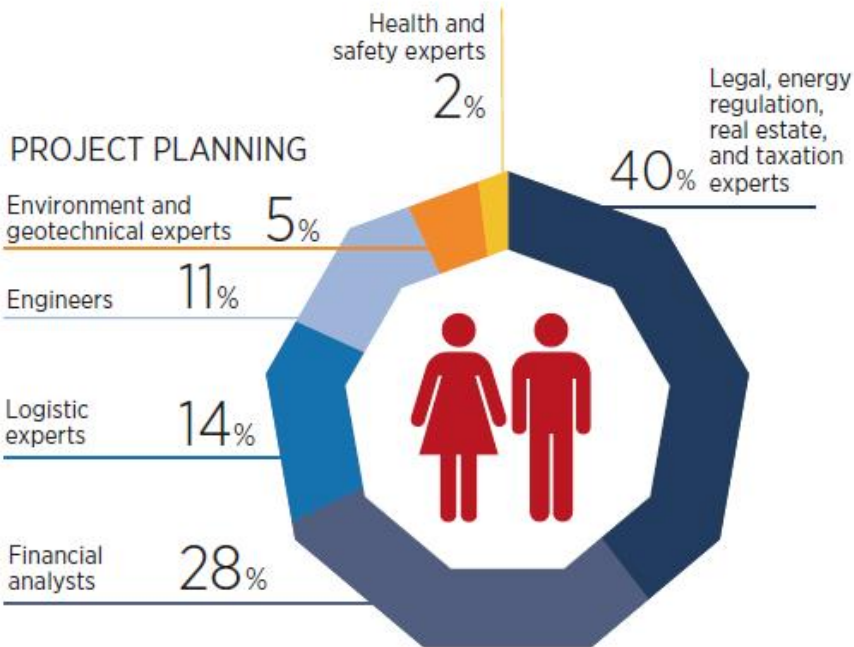
19,000
person-days

MANUFACTURING AND
PROCUREMENT



875
person-days
per 300 miles

TRANSPORT



... while creating job opportunities...



34,500
person-days

INSTALLATION AND GRID CONNECTION



2,665
person-days per year

OPERATION AND MAINTENANCE



8,400
person-days

DECOMMISSIONING

INSTALLATION AND GRID CONNECTION

Quality control 0.2%

Logistic experts 1%

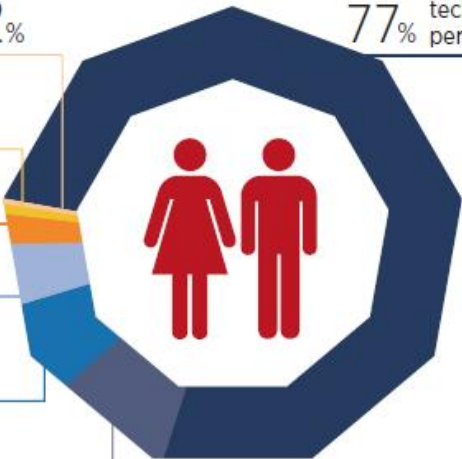
Environment experts 2%

Health and safety experts 4%

Engineers and construction foremen 7%

Professionals managing cranes, trucks, etc. 9%

77%
Construction workers and technical personnel



... stimulating innovation...

“Pay-As-You-Go” Solar Could Electrify Rural Africa

by [Sanjoy Sanyal](#) - February 08, 2017

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More than 600 million people in sub-Saharan Africa lack access to electricity; 71 million in Kenya and Tanzania alone. Without any other options, these citizens are forced to either go without power or use kerosene, an expensive and oftentimes dangerous fuel that pollutes the air and creates fire hazards.

But **there is a solution** that could bring affordable electricity to unserved and underserved populations while growing the local economy: pay-as-you-go solar.



Tanzanian woman holds a solar lighting kit.
Photo by Russell Watkins/DFID

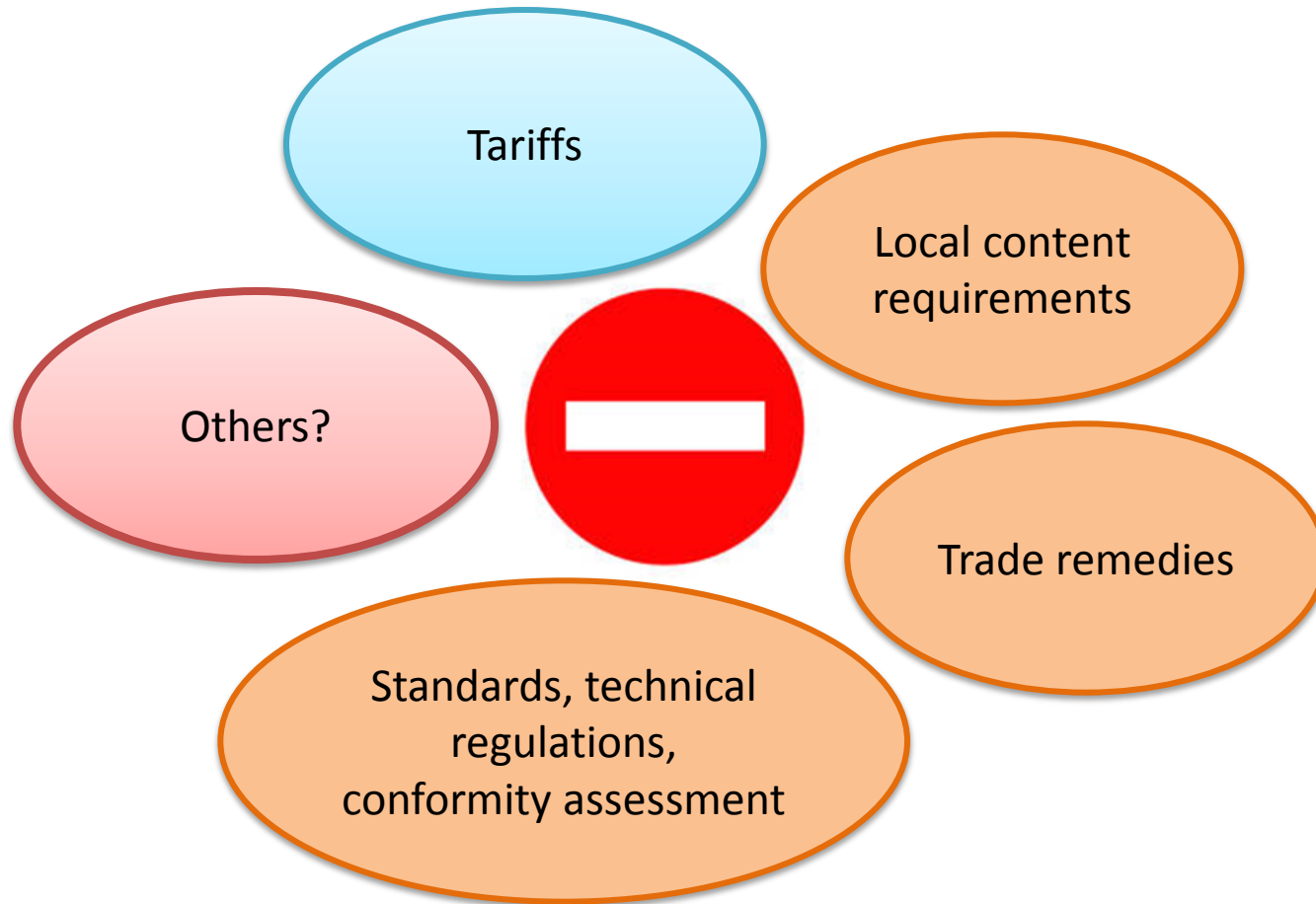
Source: World Resources Institute (WRI), 8 February 2017

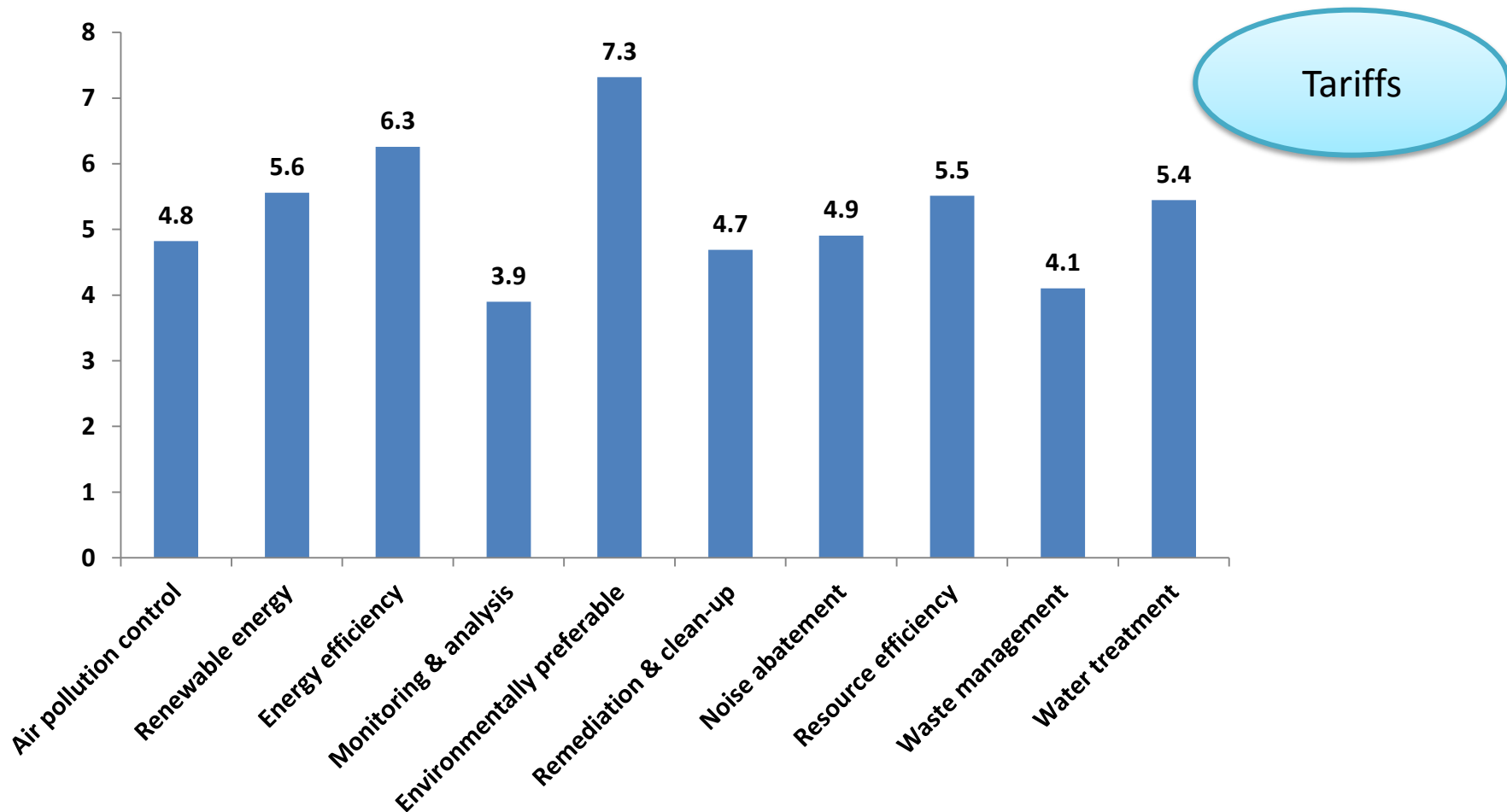
... and providing other win-win opportunities

The central image is a circular diagram representing the 17 Sustainable Development Goals (SDGs). The goals are arranged in a circle, each with a colored segment and a number. Surrounding this central diagram are several images and icons that illustrate specific goals:

- Goal 2: ZERO HUNGER** (Orange square icon with a bowl and steam). Images include a roll of black plastic mulch and a field of green plants with black plastic mulch.
- Goal 3: GOOD HEALTH AND WELL-BEING** (Green square icon with a heart and pulse line). Images include a green electric rice cooker and a medical monitor displaying vital signs.
- Goal 4: QUALITY EDUCATION** (Red square icon with an open book and pencil). Image shows a young girl in a green dress holding a solar panel and a pink balloon.
- Goal 6: CLEAN WATER AND SANITATION** (Blue square icon with a water drop and arrow). Images include an orange water pump and a traditional windmill.
- Goal 7: AFFORDABLE AND CLEAN ENERGY** (Yellow square icon with a sun). Image shows a solar panel.

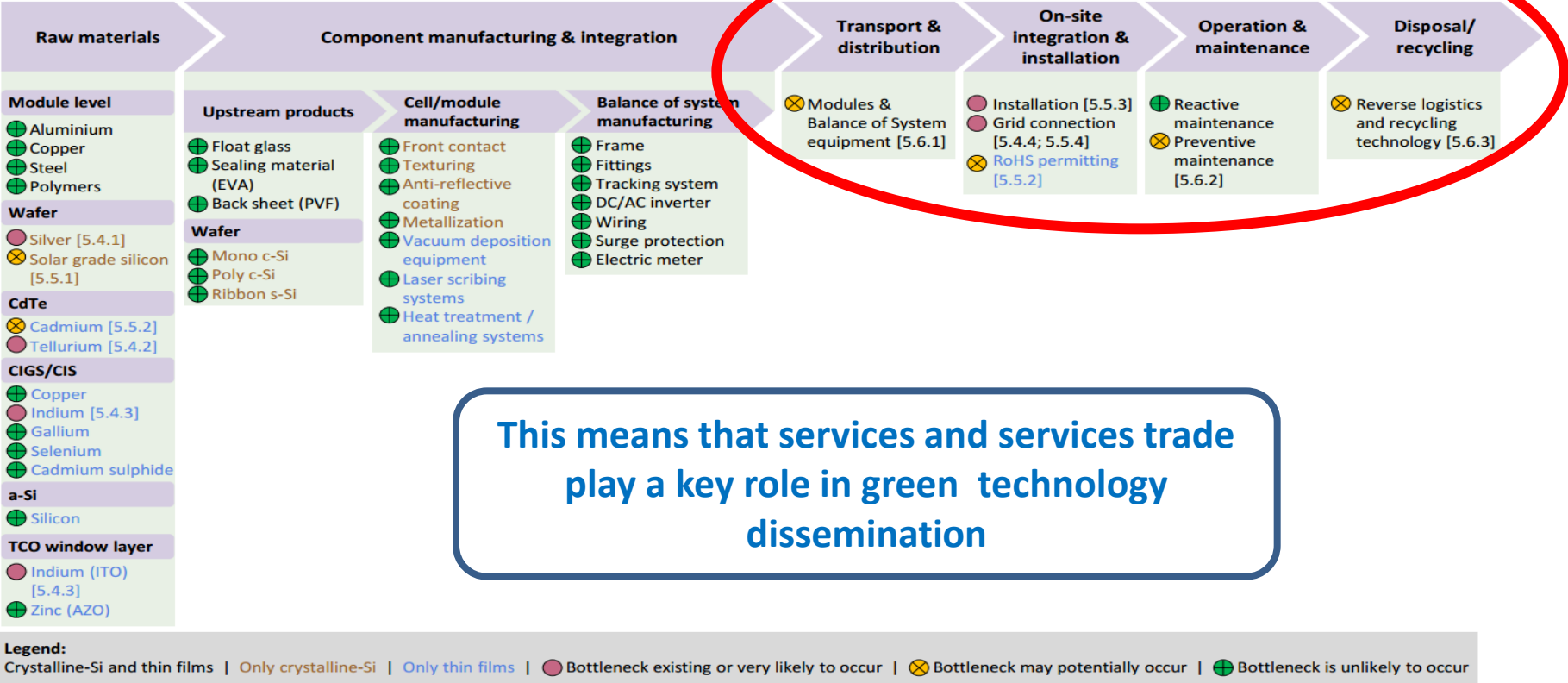
But many measures can affect trade in green goods





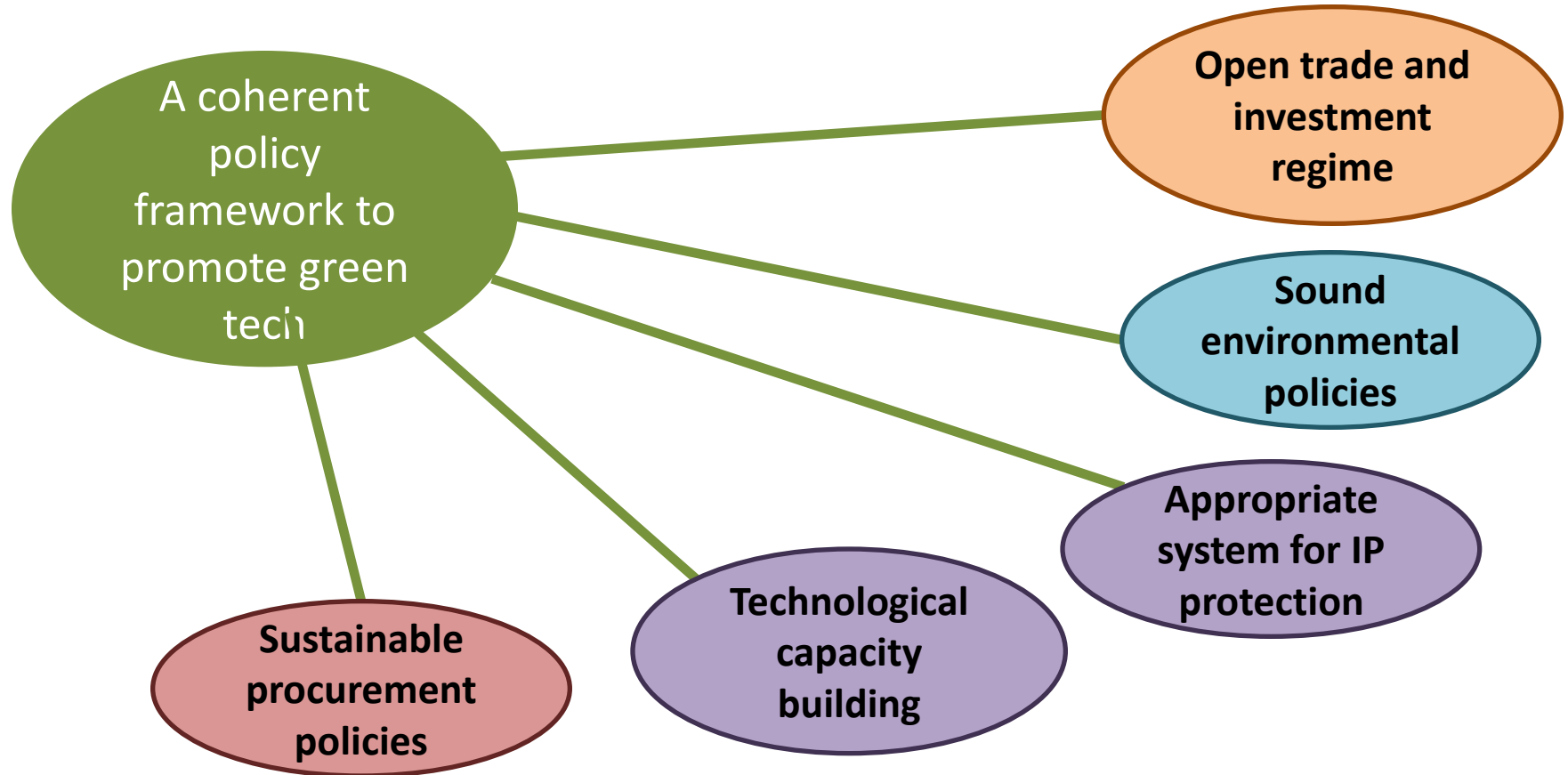
**Average applied MFN tariffs by WTO members
(ca. 300 environmental goods, 2016)**

Environmental goods are supplied together with services



Source: E4tech & Avalon, IEA-RETD RE-SUPPLY Study, 2012
<http://iea-rettd.org/archives/publications/re-supply>

Trade is not a silver bullet, but a necessary part of a coherent green tech policy framework



Thank you

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