



TECHNOLOGY AND INNOVATION REPORT 2023

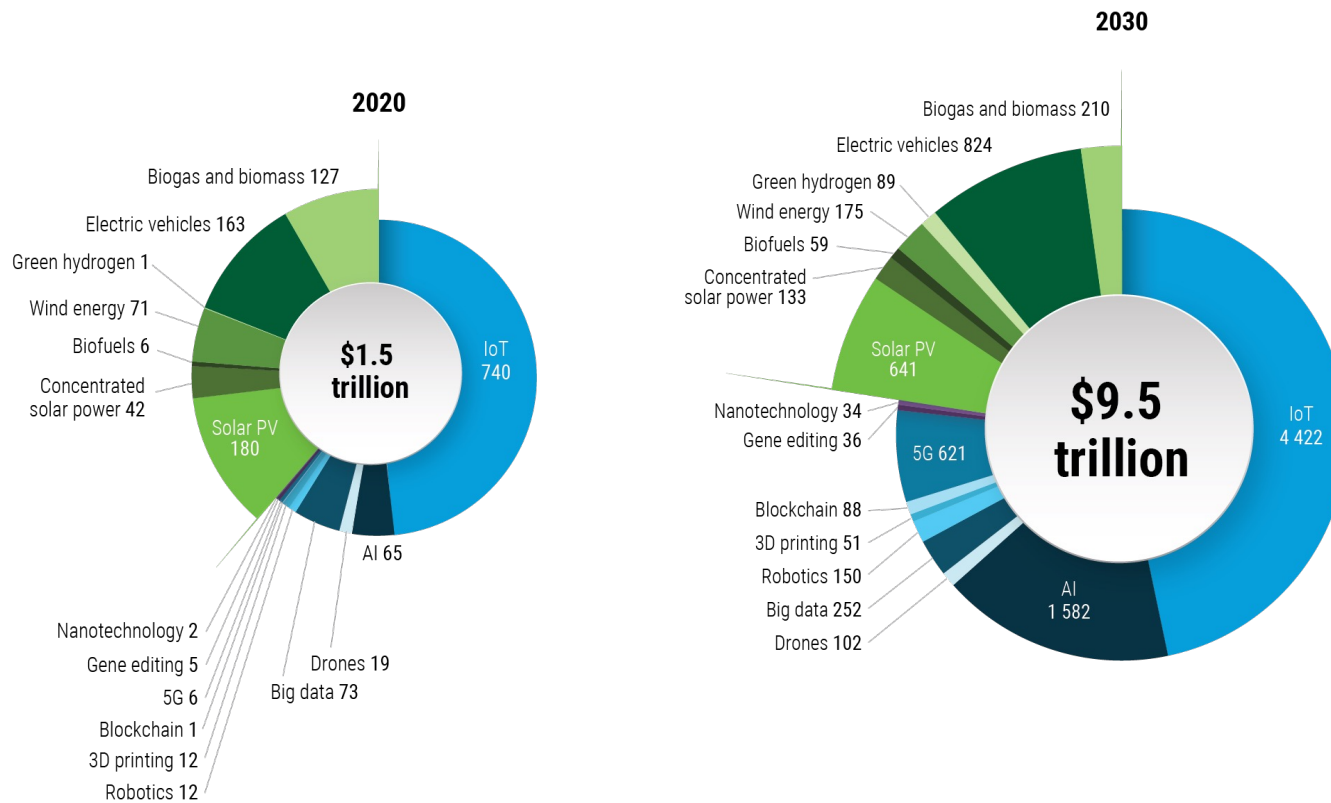
Opening green windows
*Technological opportunities
for a low-carbon world*



UNITED NATIONS
UNCTAD

There are enormous opportunities in the development of green frontier technologies

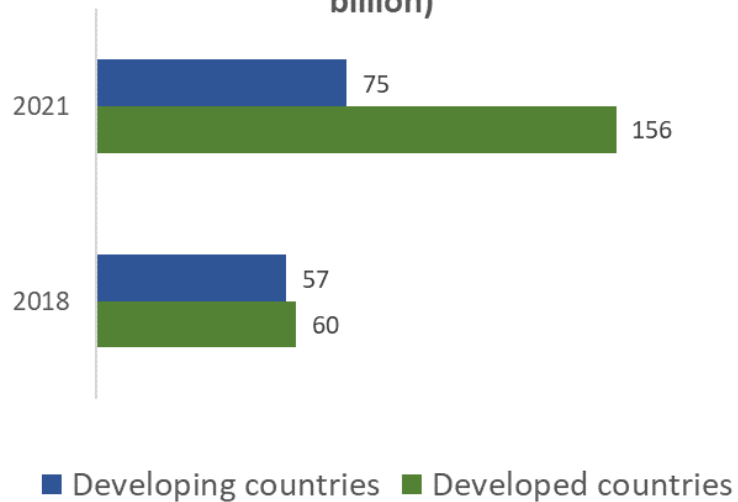
Market size estimates of frontier technologies, \$ billion



Source: UNCTAD based on various estimates.

But so far, developed economies are seizing most of the opportunities

Exports of green technologies (USD billion)



Top green frontier technology providers

Solar PV	Biofuels	Wind energy	Green hydrogen	Electric vehicles	Concentrated solar power	Biogas and biomass
Jinko Solar	Archer Daniels Midland	GE Power	Siemens Energy	Tesla	Abengoa Solar	Future Biogas
JA Solar	ALTEN Group	Mitsubishi Heavy Industries	Linde	Ford	Iberolica Group	Air Liquide
Trina Solar	Louis Dreyfus	ABB	Toshiba Energy	Hyundai	ENGIE	PlanET Biogas Global
Canadian Solar	Brasil Bio Fuels	Siemens Gamesa Renewable Energy	Air Liquide	Chevrolet	NextEra Energy Resources	Ameresco
Hanwa Q cells	BIOX Corp	Goldwind	Nel ASA	BYD	BrightSource Energy	Quantum Green
	Renewable Energy Group	Enercon	Air Products and Chemicals	Volkswagen		Envitech Biogas
	Wilmar international		Guangdong Nation-Synergy Hydrogen Power Technologies	Renault-Nissan-Mitsubishi Alliance		Weltec Biopower

Paths to seize benefits from the green technological revolution

1

Developing and using
renewable energy
technologies

2

Greening traditional
global value chains
by switching to digital
technologies

3

Diversifying towards
production sectors
that are more
complex and greener

National policies



Set the direction towards green technologies and innovation

Align environmental and industrial policies
Invest in more complex and greener sectors
Incentives and infrastructure to shift demand



Build green productive and innovative capacities

Invest in R&D
Raise awareness of green technologies
Develop digital infrastructure and skills

International cooperation

Cooperation through international trade

Greater flexibility in the international intellectual property rights system

Partners for green technology

Multilateral and open innovation

Assessing technologies

Regional and South-South cooperation in science, technology and Innovation

Environment Preservation & Protection

- Elimination/reduction of paper use through ASYCUDA
- Elimination/reduction of physical trips between agencies through ASYCUDA-based Single Window
- Monitoring of trade of ozone-depleting substances through ASYCUDA-based Single Window
- Combat environmental crime through eCITES
- Reduction of fuel wastage and unnecessary CO2 emissions with
 - improved maritime logistics and end-to-end supply chain visibility through ASYHUB
 - reduction of number of trucks idling at the border through ASYCUDAWorld



Sri Lanka

- ▶ 1 178 permit requests delivered for the trade of endangered species in 2022
- ▶ CITES permit processing time reduced from 5 days to 27 hours



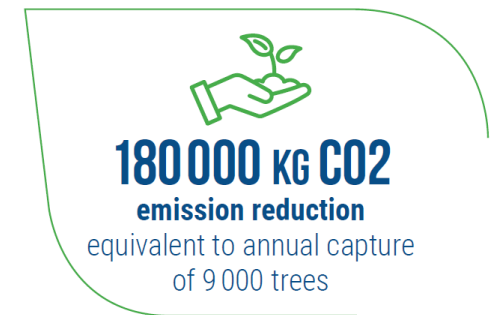
Timor-Leste SW



in physical trips
and printed paper



Vanuatu SW



Corridor Cotonou-Niamey transit time

1 Hour

Average transit clearance
time at borders offices 🕒

Conclusion

Technologies already exist

Political will needed

Developing countries should catch the green technological revolution early

Thank you!



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