



ENERGY



Leveraging Financial Mechanisms for Increasing Investment in Energy Efficiency

Gray Bender, UNECE-SED/Harvard Kennedy School

GEEE-9

Geneva, Switzerland | 3 October 2022





1. Energy Efficiency in Sustainable Development Goals
2. Investment & Savings Potential of Energy Efficiency
3. Challenges & Risks to Growing Investment
4. Financing Mechanisms
5. Conclusion

Energy Efficiency and the SDGs

ENERGY



Goal 7: ensure access to affordable, reliable, sustainable, and modern energy for all

Target 7.3

Double the global rate of improvement in energy efficiency by 2030

Target 7.a

Enhance international cooperation on clean energy and energy efficiency technology

Target 7.b

Increase supply of energy services in developing countries



Energy Efficiency and the SDGs

ENERGY



1 NO POVERTY

2 ZERO HUNGER

3 GOOD HEALTH AND WELL BEING

4 QUALITY EDUCATION

5 GENDER EQUALITY

6 CLEAN WATER AND SANITATION

7 AFFORDABLE AND CLEAN ENERGY

8 DECENT WORK AND ECONOMIC GROWTH

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

10 REDUCED INEQUALITIES

11 SUSTAINABLE CITIES AND COMMUNITIES

12 RESPONSIBLE CONSUMPTION AND PRODUCTION

13 CLIMATE ACTION

14 LIFE BELOW WATER

15 LIFE ON LAND

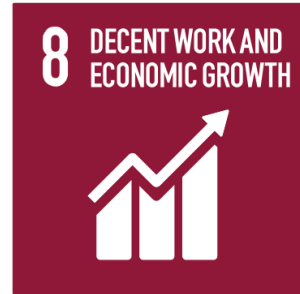
16 PEACE, JUSTICE AND STRONG INSTITUTIONS

17 PARTNERSHIPS FOR THE GOALS



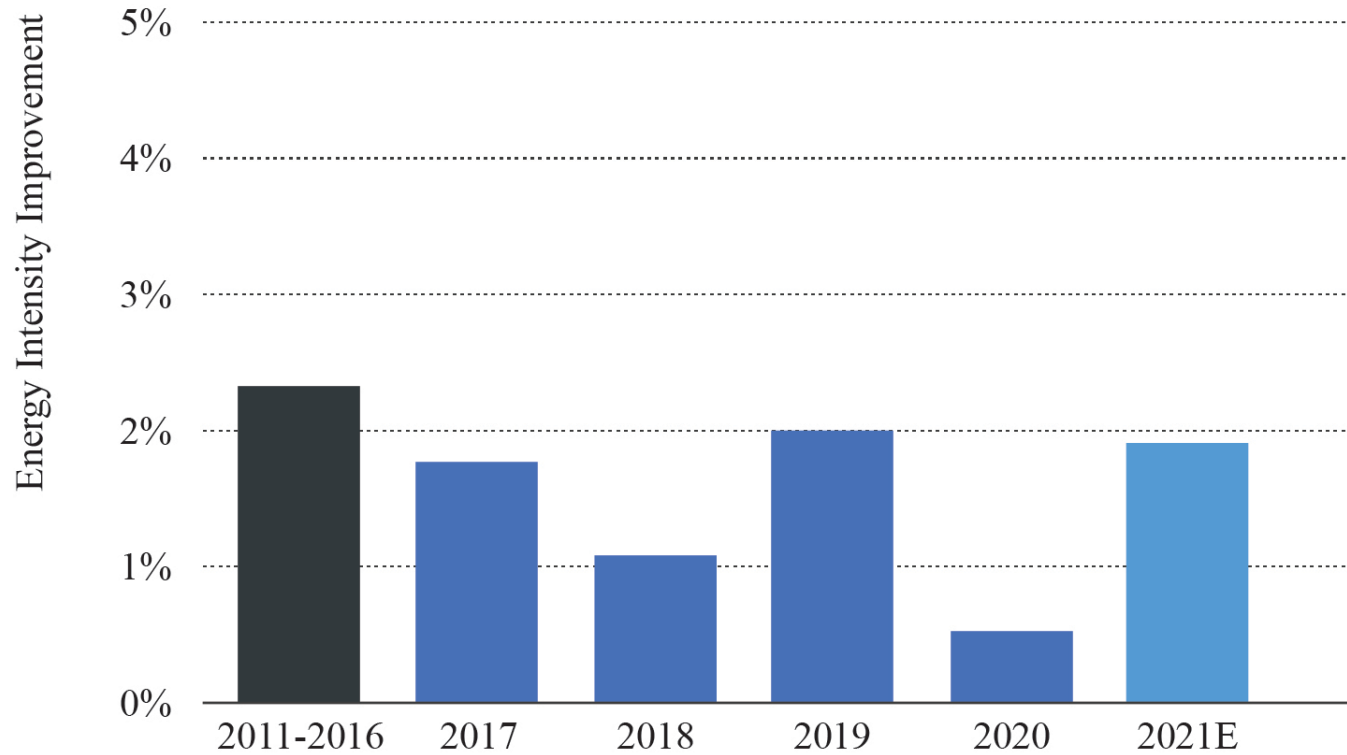
Energy Efficiency and the SDGs

ENERGY



Achieving Net Zero by 2050

ENERGY

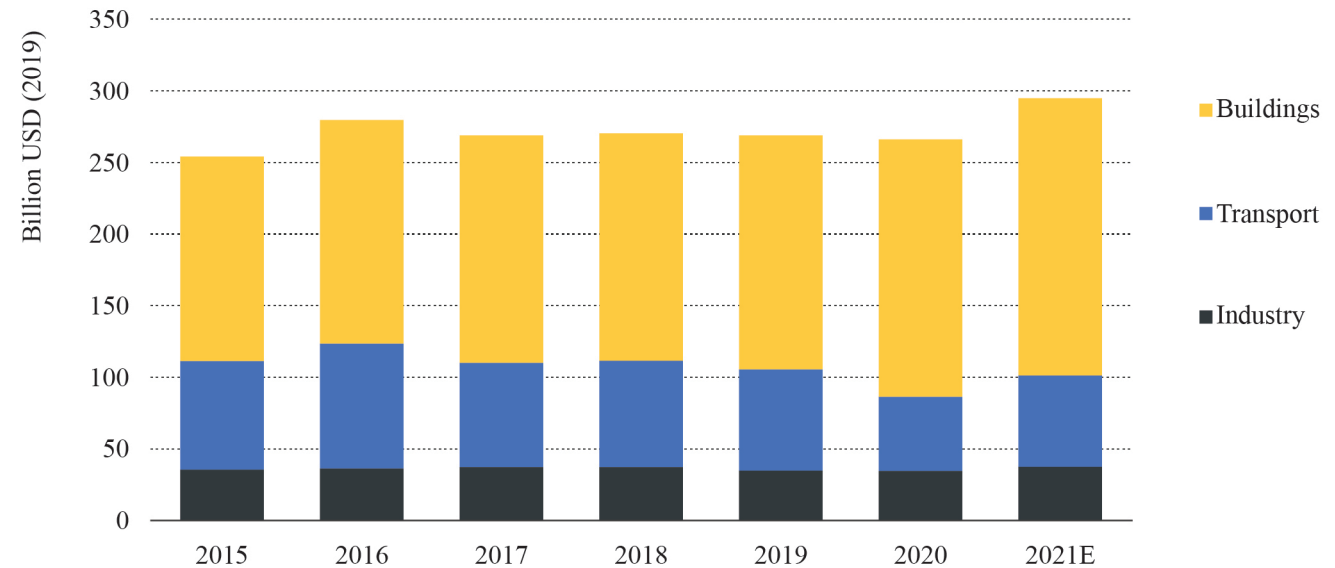




\$1.4 tn

Expected clean energy investment in 2022

Investment Potential



(Source: IEA, *Energy Efficiency 2021*)

Energy Savings Potential

ENERGY



1,500 TWh

Savings from energy efficiency standards across nine largest countries, 2018

3,500 TWh

Potential savings if all countries implement similar standards

Energy Savings Potential

ENERGY



20-30%

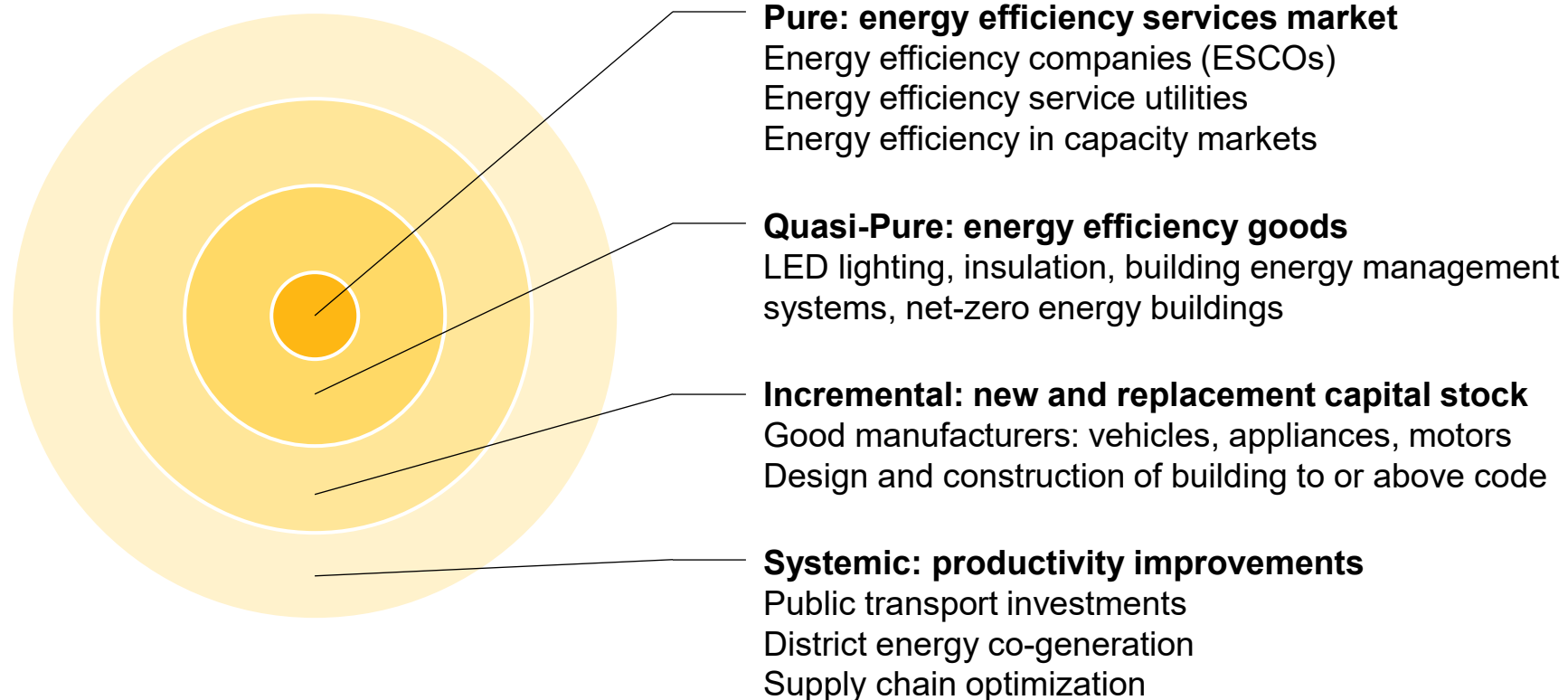
Potential energy savings from
standard building retrofits

75%+

Potential energy savings from deep
building retrofits

Defining Energy Efficiency Investment

ENERGY



(G20 Energy Efficiency Finance Task Group, 2017)



Challenges & Risks to Growing Investment

Challenges

ENERGY



Challenges



-
-
-

Challenge	Description	Mitigation(s)
Split Incentives	One of the more complicated challenges to energy efficiency is that of split incentives, wherein the entity responsible for implementing efficiency upgrades is not the one responsible for utility payments or other costs . This is common in the residential and commercial real estate sectors, where tenants are often responsible for utility payments, but capital projects remain the responsibility of the property owner. In this case neither entity has the incentive to invest in energy efficiency projects . This challenge is pervasive globally as rental arrangements make up a large portion of building occupancy around the world.	Programs that benefit building owners beyond reduction in utility bills, such as green mortgages and demonstration of higher rent potential, higher occupancy rates, and increase in property value Energy-as-a-Service models that incentivize a third-party entity to maintain maximum system performance and energy efficiency (see Section 5. Financing Mechanisms)

-
-
-



Project Risk Types

Performance Risk

- Project, product or service will not perform as intended

Credit Risk

- Borrower's failure to repay a loan or financial contract

Financial Risk

- Ability to manage debt and fulfill obligations

Regulatory Risk

- Changes in regulation and legislation governing a project



Financing Mechanisms

Financing Mechanisms

ENERGY



6

Established Mechanisms

10

Emerging Mechanisms

3

Investment models



Energy Efficiency Mortgages

ENERGY



- Preferential financial conditions mortgages linked to energy efficient buildings
- Buildings designed and constructed or retrofitted to high energy efficiency standards
- Lenders recognize the verified energy savings, combine project cost into existing mortgage & improve mortgage conditions

Property Assessed Clean Energy (PACE)

ENERGY



- Enables investment in energy efficiency & distributed renewable energy to be repaid through property tax
- Asset-based financing system enables owners to sell property without carrying over the debt
- Required engagement and policy implementation with local government
- De-risks investment by tying payment to property taxes as a “senior lien”

Energy Savings Insurance

ENERGY



- Novel risk reduction mechanism that insures energy cost savings against non-performance
- Project owner is assured that promised financial savings will be realized
- Incentivizes project developers to be accurate in their estimates and project execution
- Increasing overall financial certainty of the project, improving FI's willingness to lend and paving the path toward securitization of debt
- Useful for encouraging energy efficiency projects among SMEs

Advanced Market Commitments

ENERGY



- “Demand-pull” mechanism to encourage development of new technologies and services through agreement to purchase
- Highly effective in products and services with positive externalities not reflected in customer demand alone
- Works best when technology development has clear milestones, challenges, strong R&D base, and a healthy competitive environment providing multiple venues to success
- Governments with large purchasing power can encourage private sector to take on the risk of developing new technologies, leveraging private market capital and fostering healthy competition



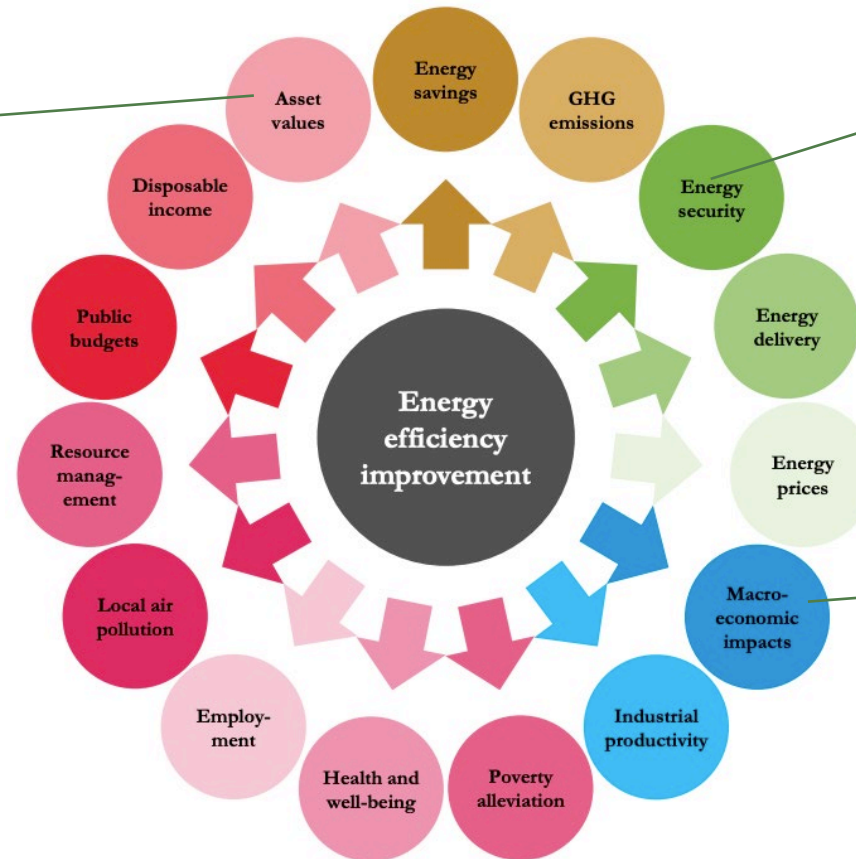
Conclusion

Abundant Co-Benefits of Energy Efficiency



Increase Value

25-77% rent premium for LEED-certified buildings; reduction in mortgage defaults, tenant turnover, vacancy rates



Energy Resilience

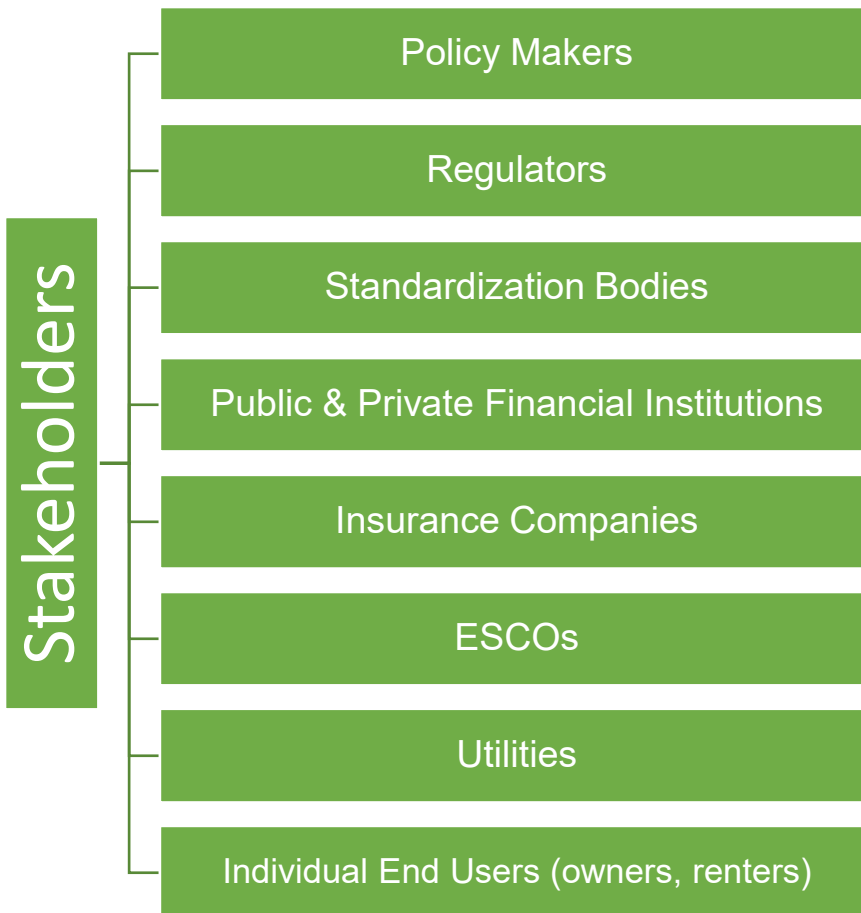
Reducing demand allows resilience measures to go further

Macro-Economic

Increasing disposable income, poverty alleviation, air pollution, etc.

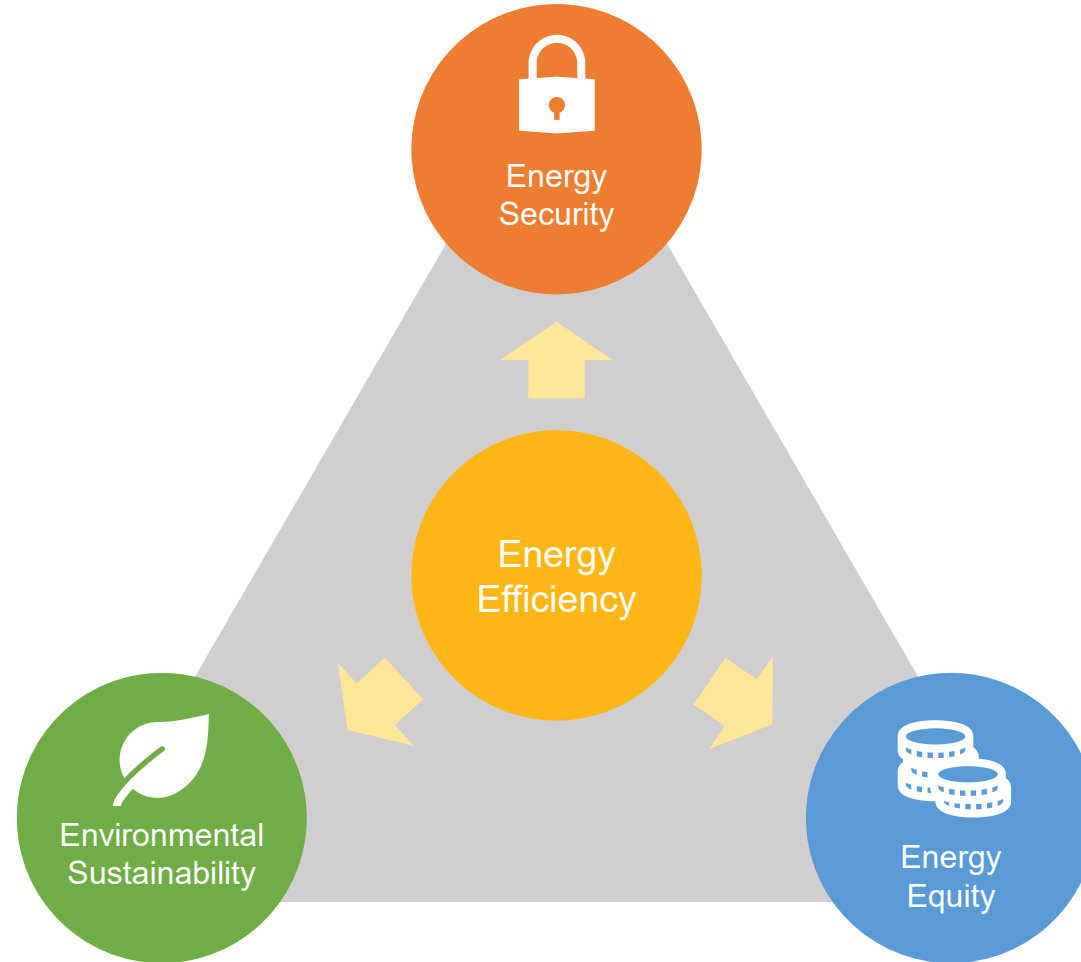


Engaging Stakeholders



Addressing The Entire Energy Trilemma

ENERGY





Thank You

GEEE-9/2022/INF.4

**Leveraging Financial Mechanisms
for Increased Investment in Energy
Efficiency**

by Gray Bender

SEPTEMBER 2022