# Towards a High-Bandwidth, Low-Carbon Future

Telecommunications-based Opportunities to Reduce Greenhouse Gas Emissions

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Specialist climate risk management services to business, government and other organizations.

Climate Change and Business
├── Risk
└── Opportunity
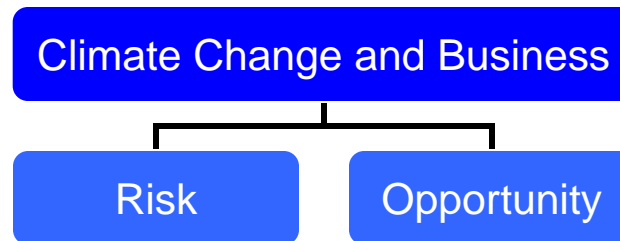

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# High yield investment or stranded asset?

If you pride yourself on managing the financial risks to your investments, you need to understand how climate change impacts your physical assets today and over typical financial terms.

At Climate Risk, we provide location-specific climate change impact projections that allow our clients to make informed investment decisions. We understand the science, so that you can understand the risks.

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**The Australia case study**

Focus is *outward looking.*

I.e. how do we address *national* emissions, not just put Telstra's own house in order?

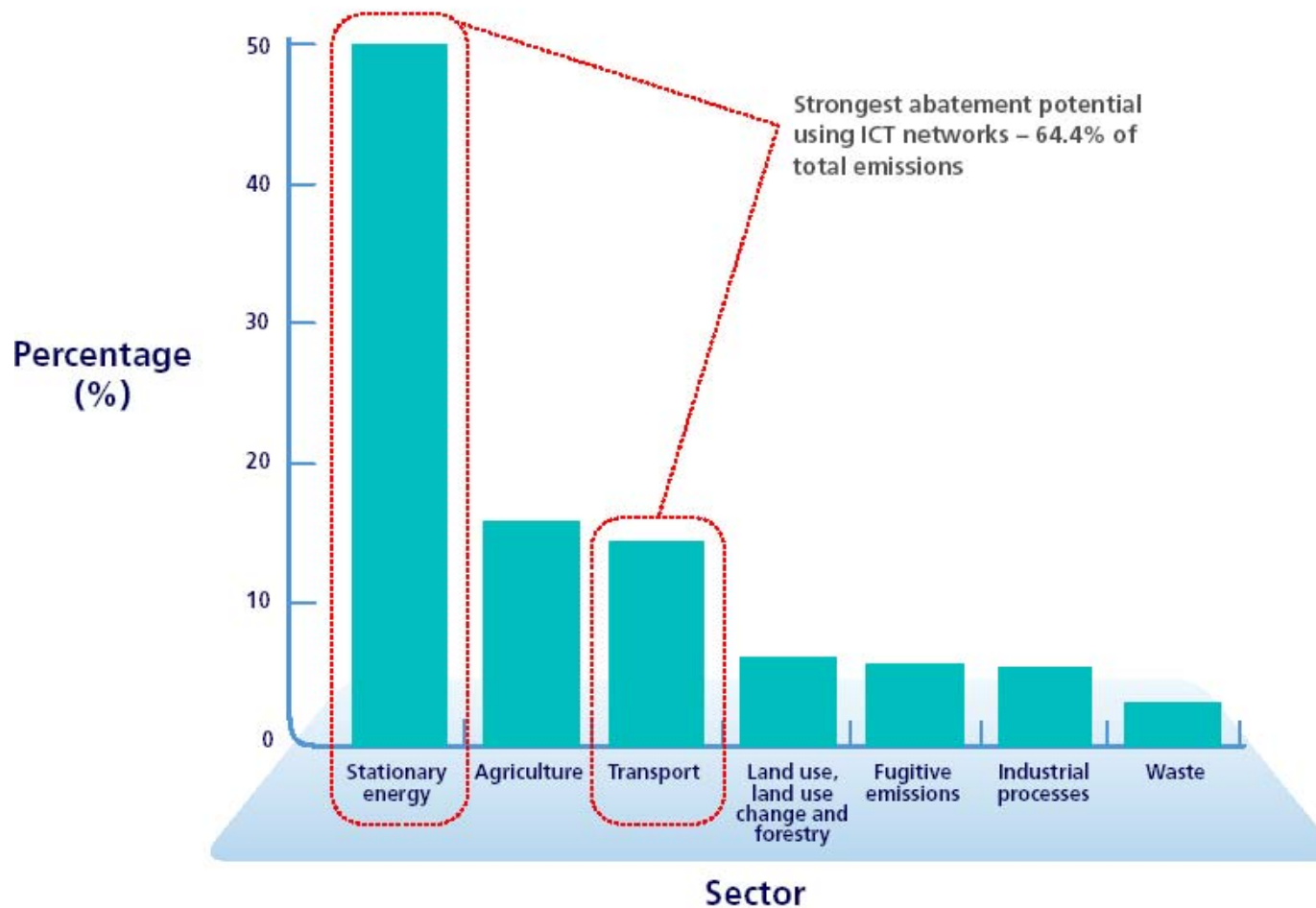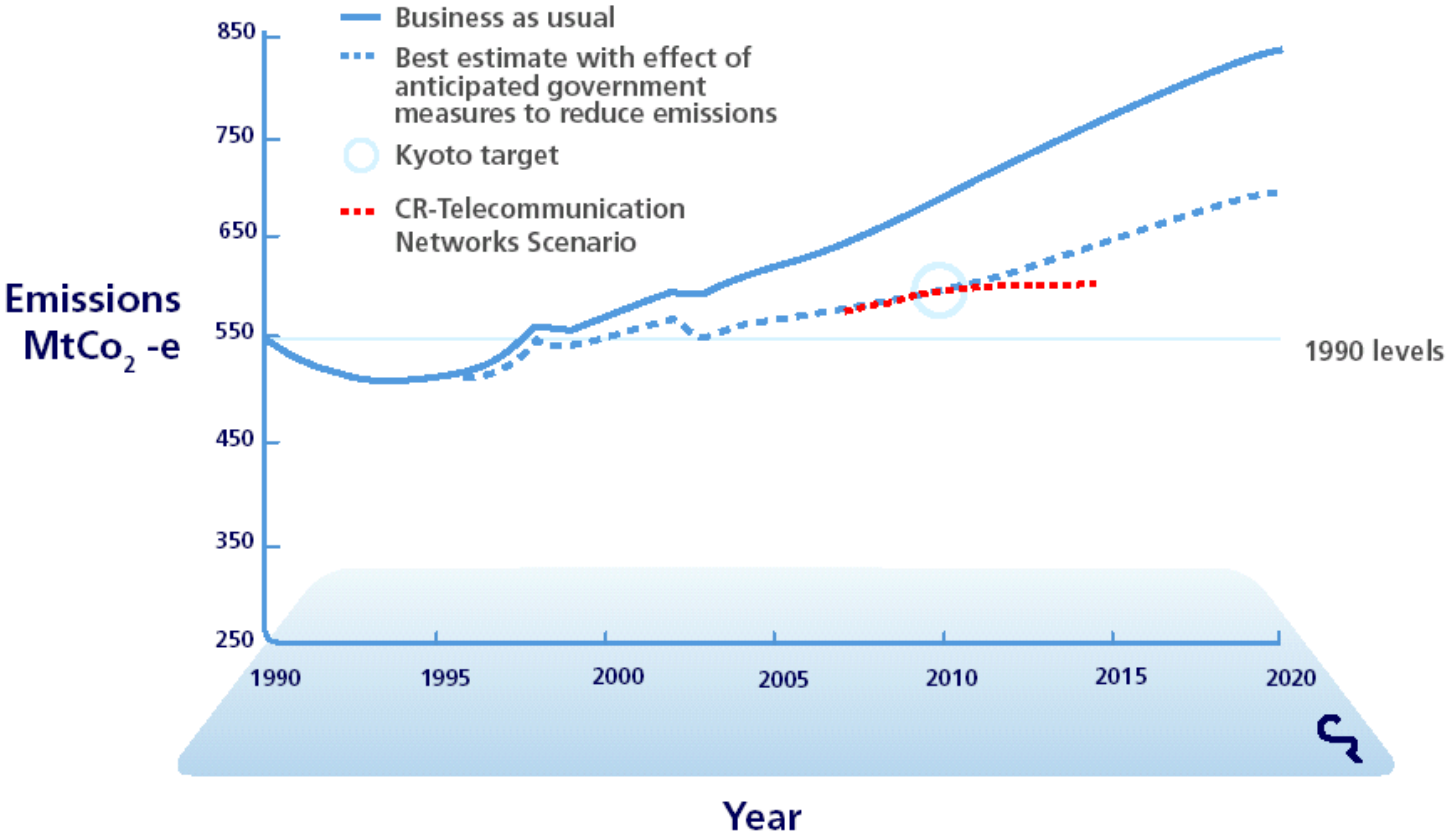# Profile of National Emissions and the ones ICT can best impact



Percentage (%) vs Sector. Strongest abatement potential using ICT networks – 64.4% of total emissions.

# Figure 24: Possible effect of Carbon-Opportunities on national emissions



Legend:
- **Business as usual**
- **Best estimate with effect of anticipated government measures to reduce emissions**
- **Kyoto target**
- **CR-Telecommunication Networks Scenario**

Y-axis: **Emissions MtCo$_2$ -e** (250, 350, 450, 550, 650, 750, 850)

1990 levels

X-axis: **Year** (1990, 1995, 2000, 2005, 2010, 2015, 2020)

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# 7 major opportunities

1. Remote Appliance Power Management
2. Presence Based Power
3. Distributed CBD
4. Real Time Freight Management
5. Personalised Public Transport
6. 'In-Person' Conferencing
7. Increased Renewable Energy

Assuming *modest* take-up = 5% emissions abatement

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## 1. Remote Appliance Power Management

Problem: 10% of house and office electricity is wasted by devices on standby.

Opportunity: Use home and office networks, with external networks/intelligence, to identify and manage standby wastage. Simplify turning standby off.

Significance: 1.8million tonnes CO2 / year, worth $170m in energy and $18-92 carbon.

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## 2. Presence Based Power

Problem: 15% of house and office electricity wasted by appliances on but not being used.

Opportunity: Use networked telemetry to make energy follow the person. If they are not there, lights, air-con, appliances go off until they return.

Significance: 3.0million tonnes CO2 / year, worth $270m in energy and $29-150 carbon.

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## 3. Decentralised CBD:

Problem: 75% of Australians drive to work = 8% of national emissions and growing.

Opportunities:

- Use networks to enhance teleworking

- Suburban business centres

- Regional decentralisation of major business

Significance: 3.1million tonnes CO2 / year, worth $1.2 bn in energy and $30-150 carbon.

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## 4. Real Time Freight Management

Problem: 1/3 of all freight kilometers are empty.

Opportunity: Use wireless networks to create an integrated, multi-modal, multi-provider management system for freight and vehicles.

Significance: 2.9 million tonnes CO2 / year, worth $1.1bn in energy and $29-150 carbon.

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## 5. Personalised Public Transport

Problem: 75% of Australians drive to work = 8% of national emissions and growing.

Opportunity: Use wireless networks to create an integrated, multi-modal, multi-provider management system for public transport … that starts at the front door with a call.

Significance: 3.9 million tonnes $CO_2$ / year, worth $1.6bn in energy and $39-200 carbon.

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RUSHING FOR THE BUS

Mr McGowan has just sent an SMS to Telco Transport.

In 9 minutes his mobile phone will beep telling him a mini-bus (with several others from the neighbourhood) is about to pull up outside his front door.

In 17 minutes he will be sitting down, in a seat that has automatically been booked for him, on a train to the city. And in 37 minutes he will be walking into work.

So easy you will forget you have a car.

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## 6. 'In-Person' Conferencing

Problem: Half of air travel is for business and a growing source on emissions.

Opportunity: Provide full speed, full size, high definition conference facilities that can be as good as an in person meeting, yet save time, money and carbon.

Significance: 6.5 million tonnes CO2 p.year, worth $2.2bn in energy and $24-120 carbon.


Photograph courtesy of Cisco Systems

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# On the Run.

This man is one of his company's most valuable (and expensive) assets. He has just spent 18 hours in transit on a plane that put out more $CO_2$ than the total annual emissions of Tonga. He has had very little sleep, and has had to miss another of his daughter's netball games. Amazingly, he is about to try to pitch to a prospective client at a meeting for which he is now running late.

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# On the Ball.

This man is also one of his company's most valuable assets, so valuable that they prefer not to waste his time in airport lounges. This morning, he has booked a Telstra 'In Person' suite in New York for his client's team. He is calm and relaxed and about to make his pitch. This afternoon he will make the same pitch to clients in Japan and then the United Kingdom. And he'll still be home in time to pick up his son from soccer training.

Brisbane to Melbourne in 15 minutes.
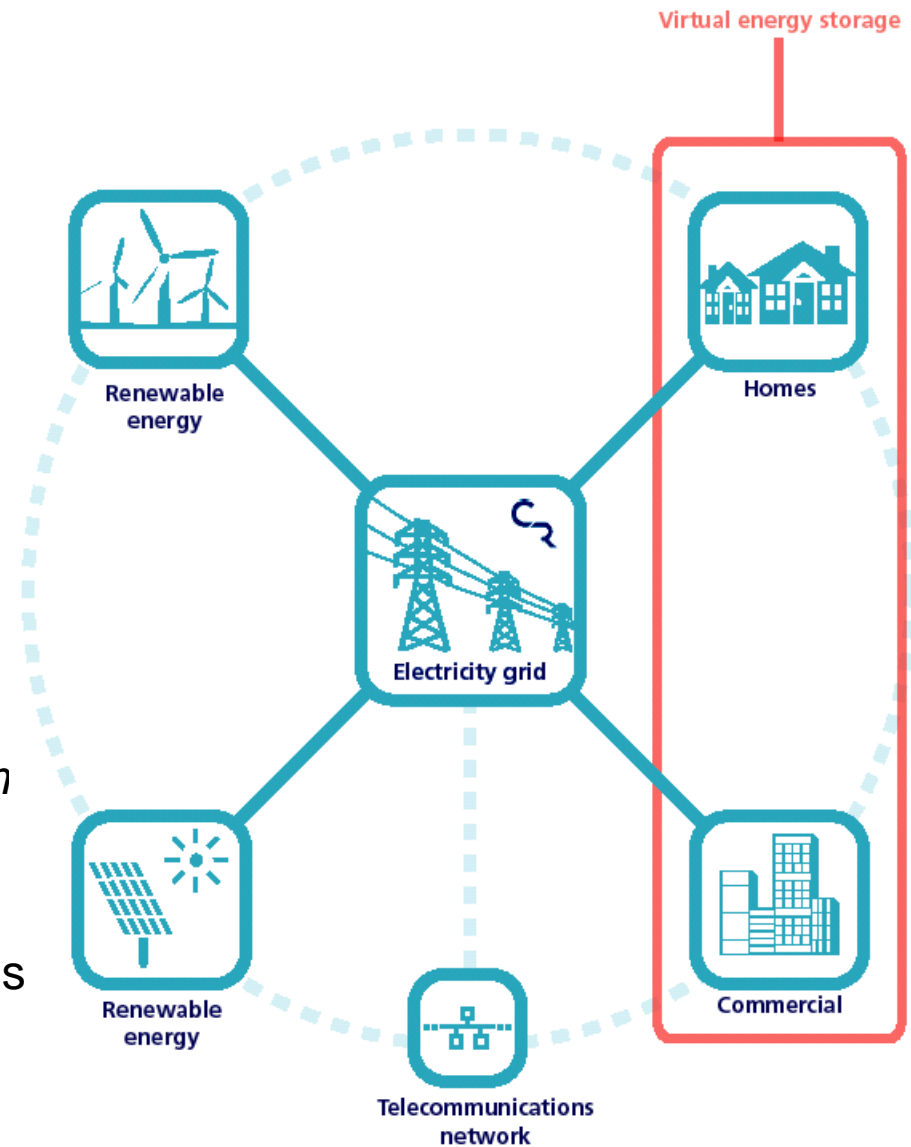(Zero greenhouse gases)

Fictitious mock-up only!

# 7. Increased Renewable Energy

Problem: Baseload contribution of renewable energy constrained by fluctuations.

Opportunity: Use networks to link energy appliances in homes and office to balance renewable energy production *in real time*.

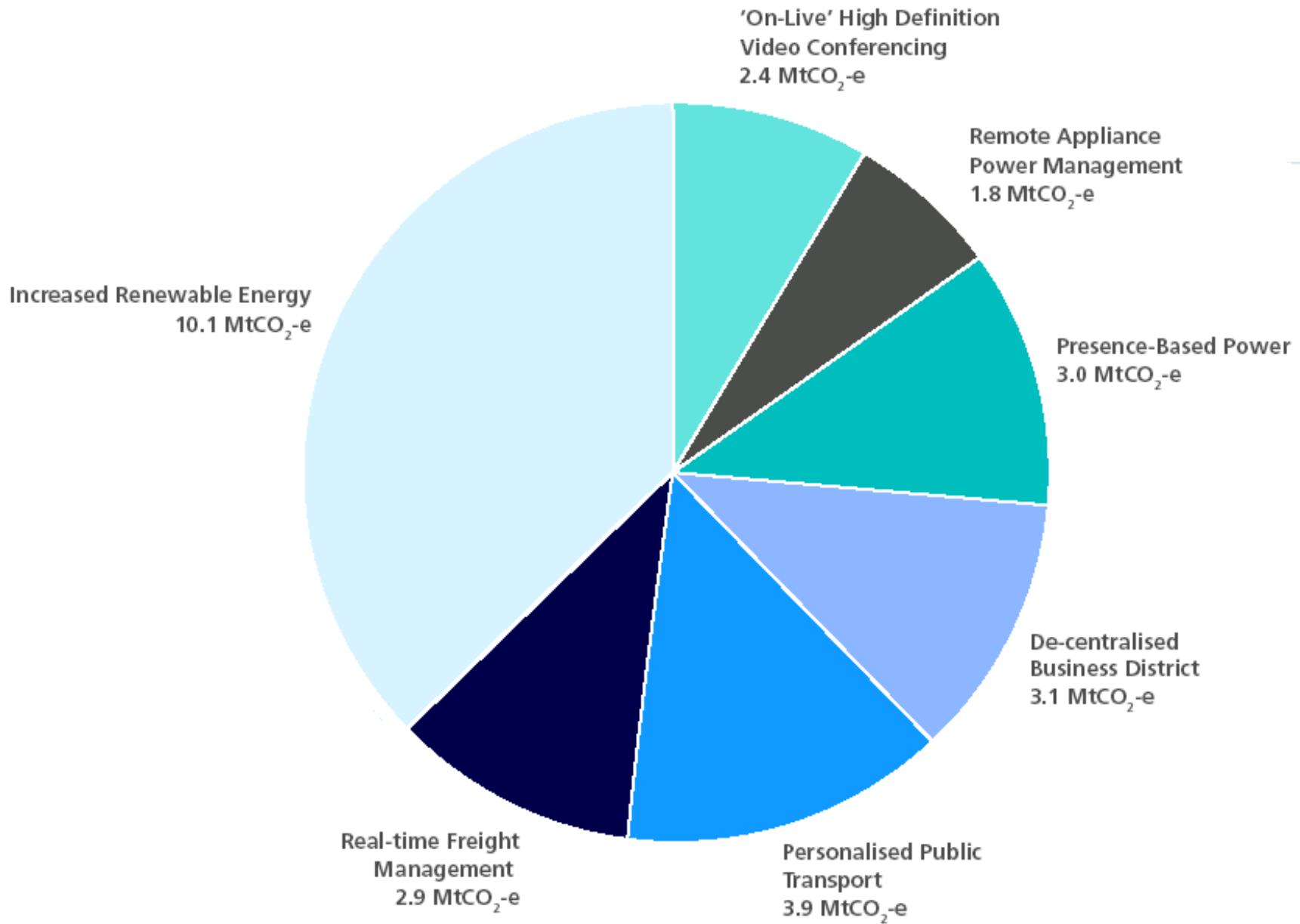Significance: 10.1 million tonnes $CO_2$/ year, worth $86m in energy and $100-300 carbon.



Virtual energy storage

Renewable energy

Homes

Electricity grid

Renewable energy

Commercial

Telecommunications network

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'On-Live' High Definition Video Conferencing 2.4 $MtCO_2$-e

Remote Appliance Power Management 1.8 $MtCO_2$-e

Increased Renewable Energy 10.1 $MtCO_2$-e

Presence-Based Power 3.0 $MtCO_2$-e

De-centralised Business District 3.1 $MtCO_2$-e

Real-time Freight Management 2.9 $MtCO_2$-e

Personalised Public Transport 3.9 $MtCO_2$-e

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Figure 22: Aggregated value for each of the Carbon-Opportunites
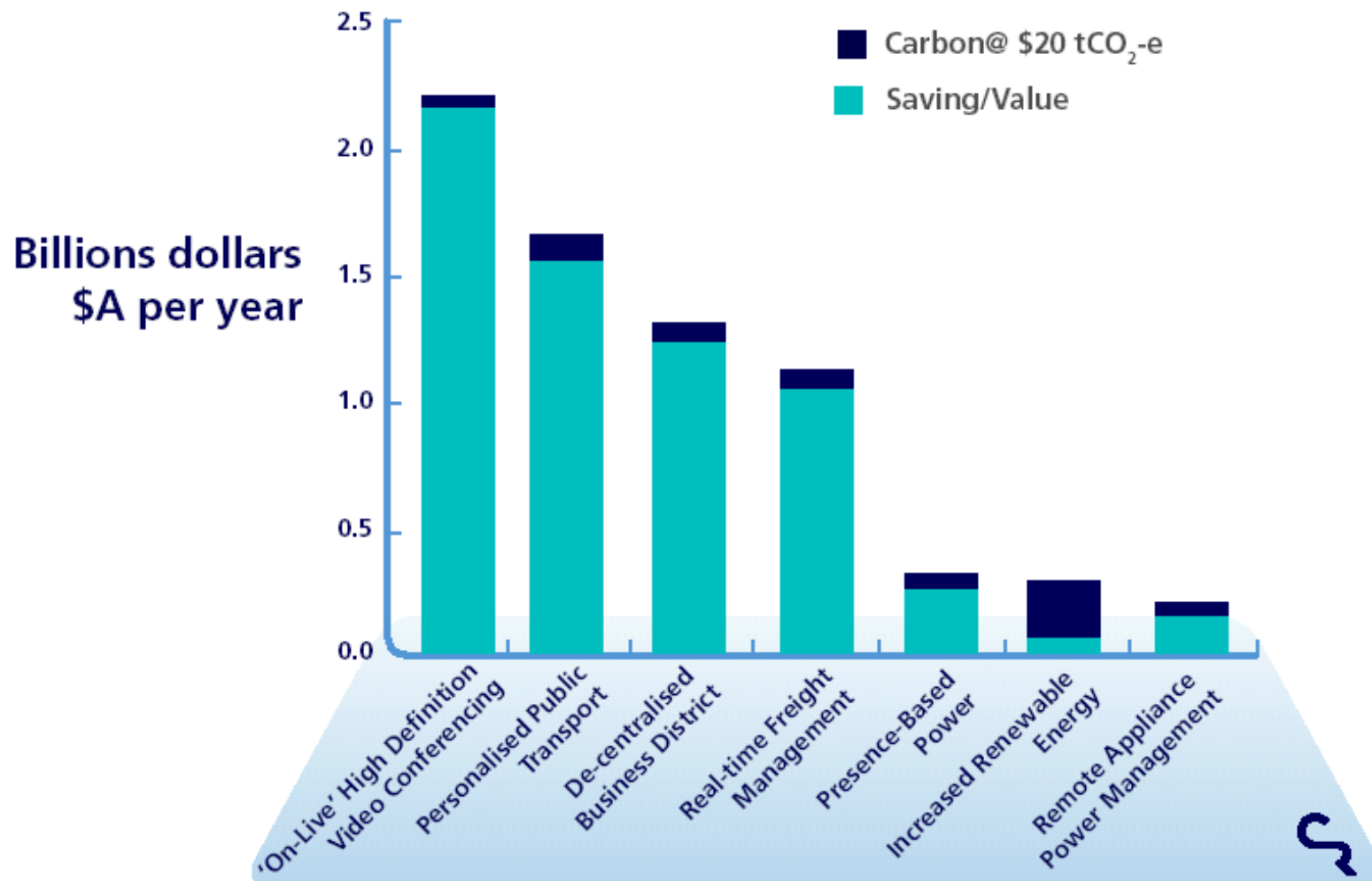
**Figure 21:** The value range of avoided carbon emissions

Carbon Value (million $A)

Carbon@ $10 tCO$_2$-e
Carbon@ $20 tCO$_2$-e
Carbon@ $50 tCO$_2$-e

Increased Renewable Energy
Personalised Public Transport
De-centralised Business District
Real-time Freight Management
Presence-Based Power
'On-Live' High Definition Video Conferencing
Remote Appliance Power Management

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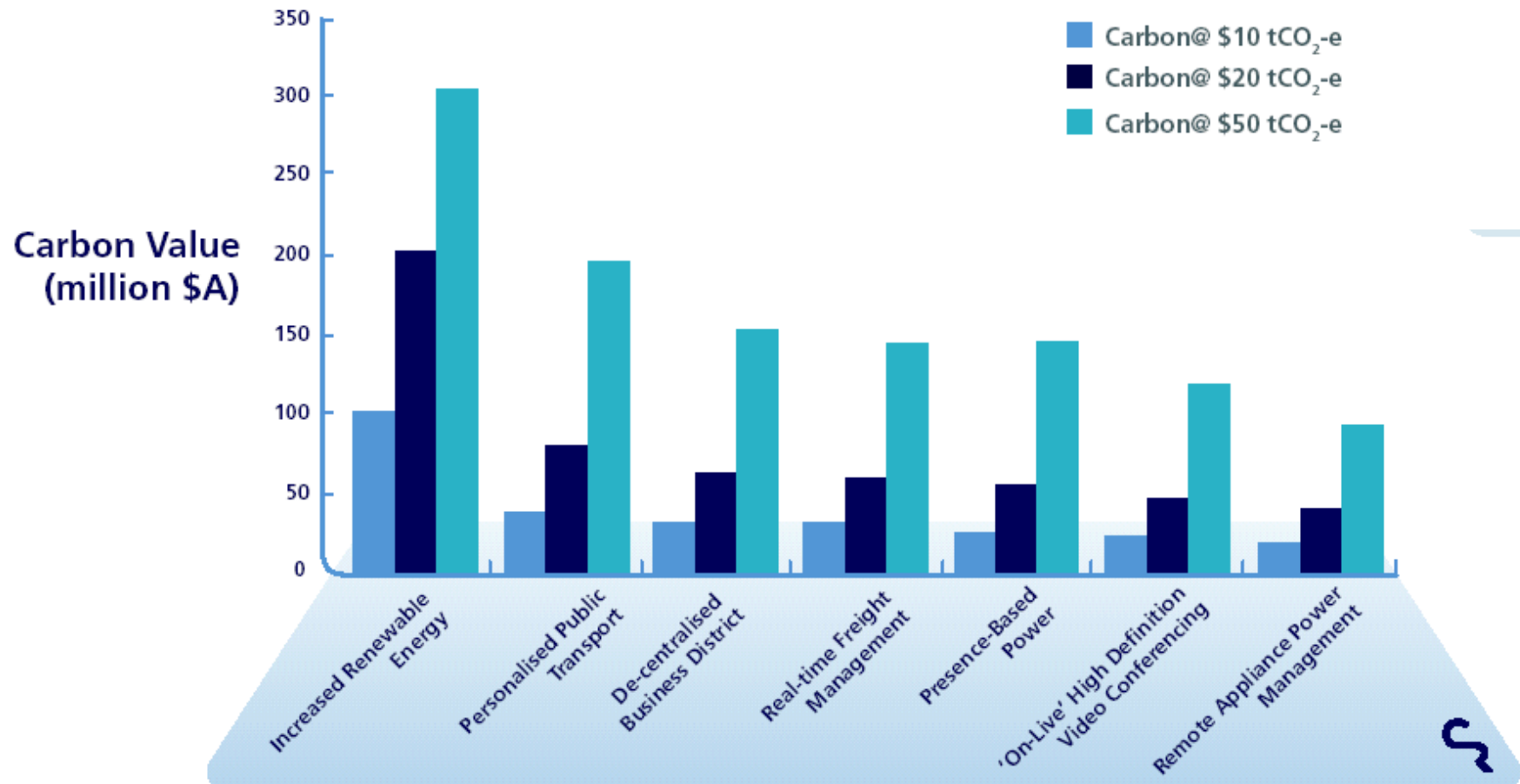
# Take-homes

> ICT can be a major factor in emissions abatement

> Both cost saving and carbon saving potential is very large

> Solutions will be 'disruptive' for other sectors (e.g. air travel for business meetings)

> The impact could be much  bigger.  Regulatory support would deliver 2 to 4 times the reductions.

# Thank you

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