기후행동 컨퍼런스 2018

CLIMATE ACTION CONFERENCE 2018

[발표자료집]

주최 WWF citi 후원 산업통상자원부 Ministry of Trade, Industry and Energy 환경부 Ministry of Environment 외교부 Ministry of Foreign Affairs 한국에너지공단 KOREA ENERGY AGENCY

기후행동 컨퍼런스 2018

CLIMATE ACTION CONFERENCE 2018

[오프닝 세션]
Opening Session

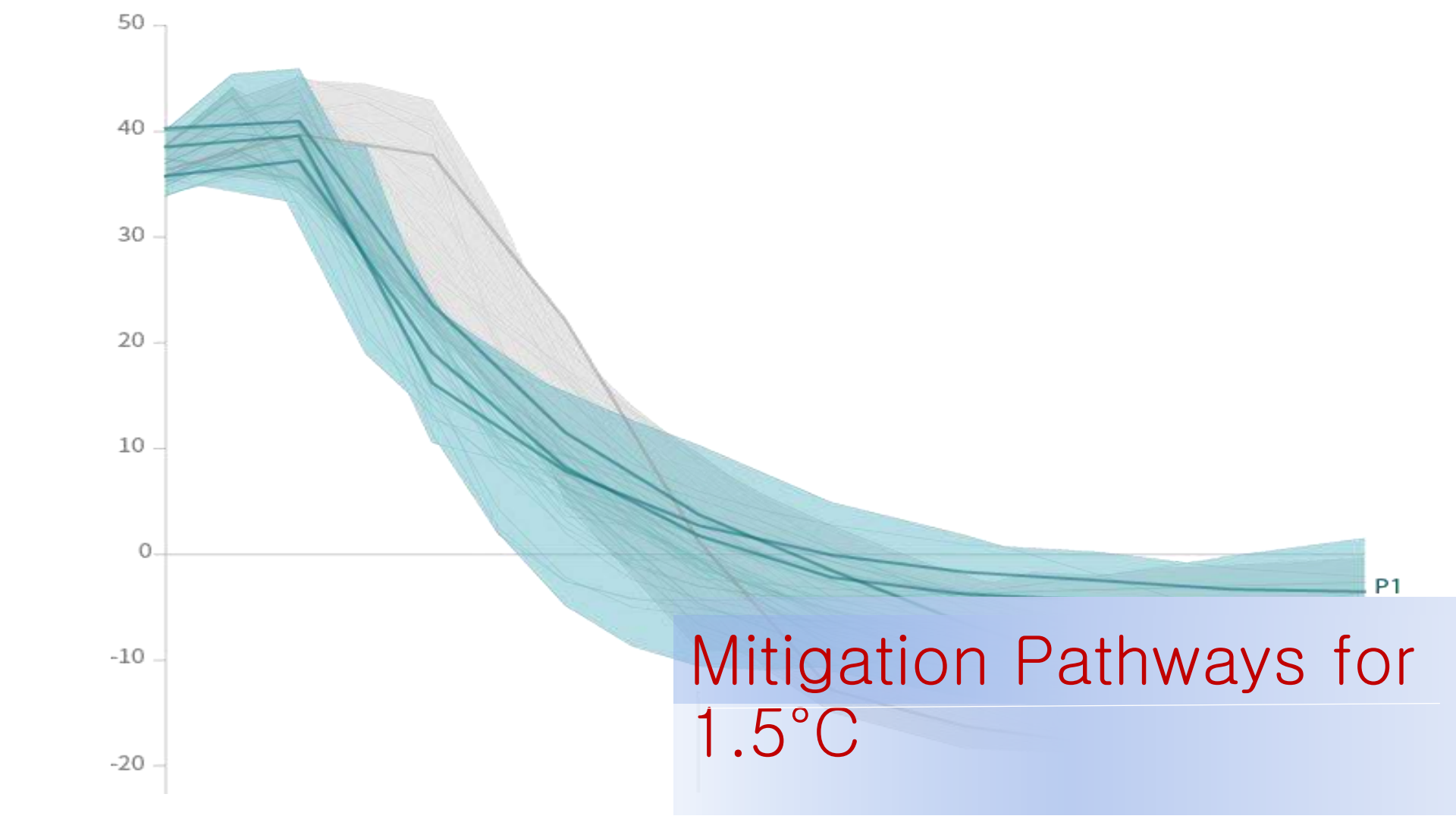
Keynote II

Mitigation pathways for 1.5 and What needs to be done

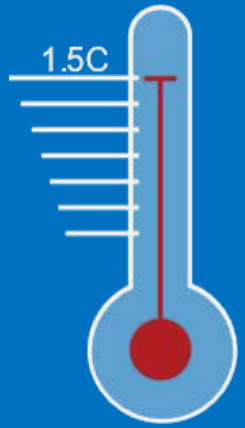
Dr. Christopher Weber

(Global Climate & Energy Lead Scientist, WWF)

주최 WWF citi 후원 산업통상자원부 Ministry of Trade, Industry and Energy 환경부 Ministry of Environment 외교부 Ministry of Foreign Affairs 한국에너지공단 KOREA ENERGY AGENCY



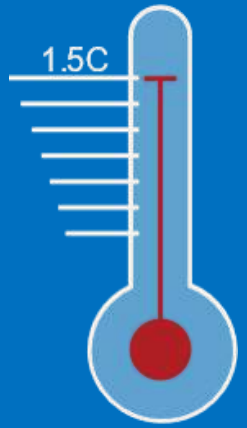
Mitigation Pathways for 1.5°C



Introduction

Outline

- High level messages on Mitigation Pathways
- Key Sector Transitions
- Implications for Companies / Science Based Targets



Mitigation Pathways for 1.5°C: High level messages

High level messages (SPM)

- **Near term action**:
  - 40-60% CO2 reductions by 2030 for 1.5°C (compared to 10-30% for 2°C)
  - 35% reductions in methane and black carbon
- **Different pathways are possible**, leading to different implications
- **Transitions must be very rapid and system-wide.** Rates of change are not unprecedented but scale is; all sectors must play their part
- **Investments** must shift to low-carbon tech and energy efficiency
- **All pathways involve some CO_2 removal (CDR),** but levels vary substantially and depend on near term action and ‘overshoot’. Most CDR measures have significant tradeoffs

Messages from >200 reviewed pathways

- Report examined pathways "consistent with limiting warming to 1.5°C above preindustrial", in year 2100
- Reviewed 90 1.5°C scenarios and 132 2°C scenarios
- Pathways are split by temperature target and level of overshoot
- Very few scenarios (9) available that limit warming to 1.5C with now overshoot

Pathway Group	*Pathway Class*	*Pathway selection criteria and description*	*Number of scenarios*	*Number of scenarios*
1.5°C or 1.5°C-consistent	*Below-1.5°C*	*Pathways limiting peak warming to below 1.5°C during the entire 21st century with 50-66% likelihood**	*9*	*90*
	1.5°C-low-OS	*Pathways limiting median warming to below 1.5°C in 2100 and with a 50-67% probability of temporarily overshooting that level earlier, generally implying less than 0.1°C higher peak warming than Below-1.5°C pathways*	*44*	
	1.5°C-high-OS	*Pathways limiting median warming to below 1.5°C in 2100 and with a greater than 67% probability of temporarily overshooting that level earlier, generally implying 0.1–0.4°C higher peak warming than Below-1.5°C pathways*	*37*	
2°C or 2°C-consistent	*Lower-2°C*	*Pathways limiting peak warming to below 2°C during the entire 21st century with greater than 66% likelihood*	*74*	*132*
	Higher-2°C	*Pathways assessed to keep peak warming to below 2°C during the entire 21st century with 50-66% likelihood*	*58*	

Source: SR1.5 Table 2.1

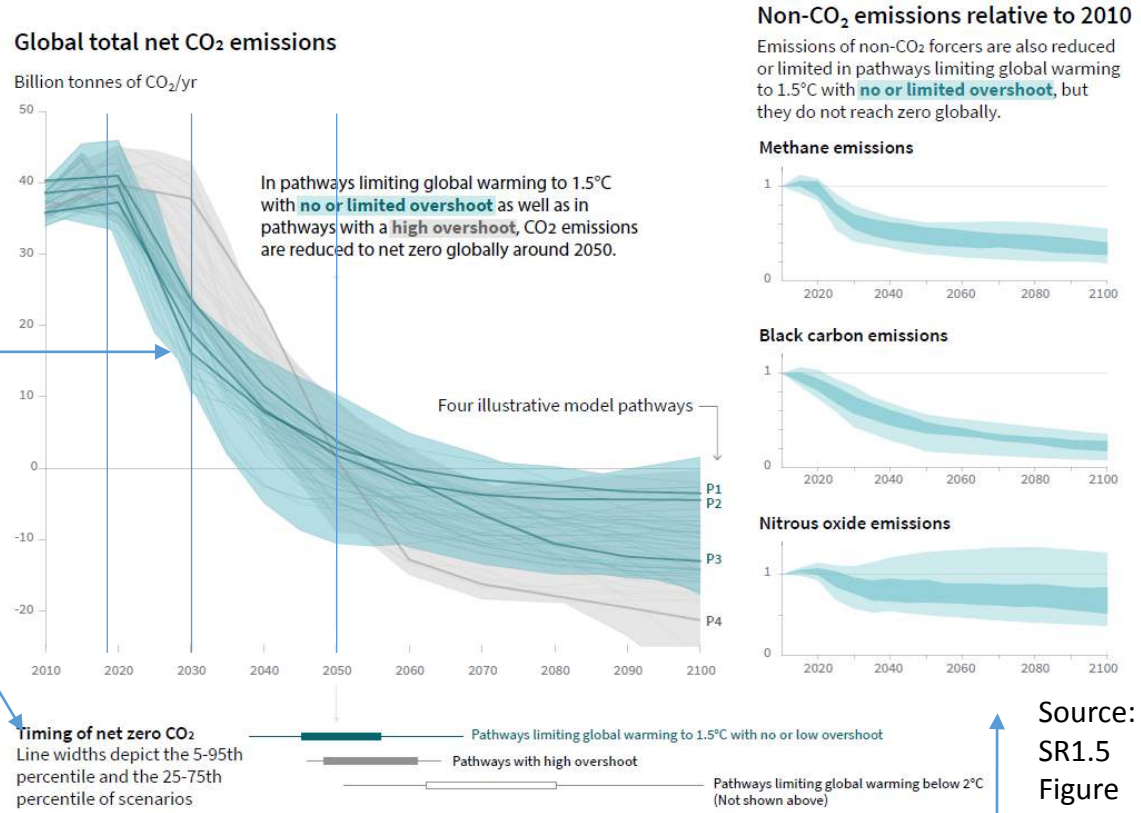
1.5°C Pathways: Near Term Action

1.5C compliant scenarios reduce CO_2 and non-CO_2 emissions substantially:

CO_2: 40-60% by 2030, net zero by ~2050

While also reducing

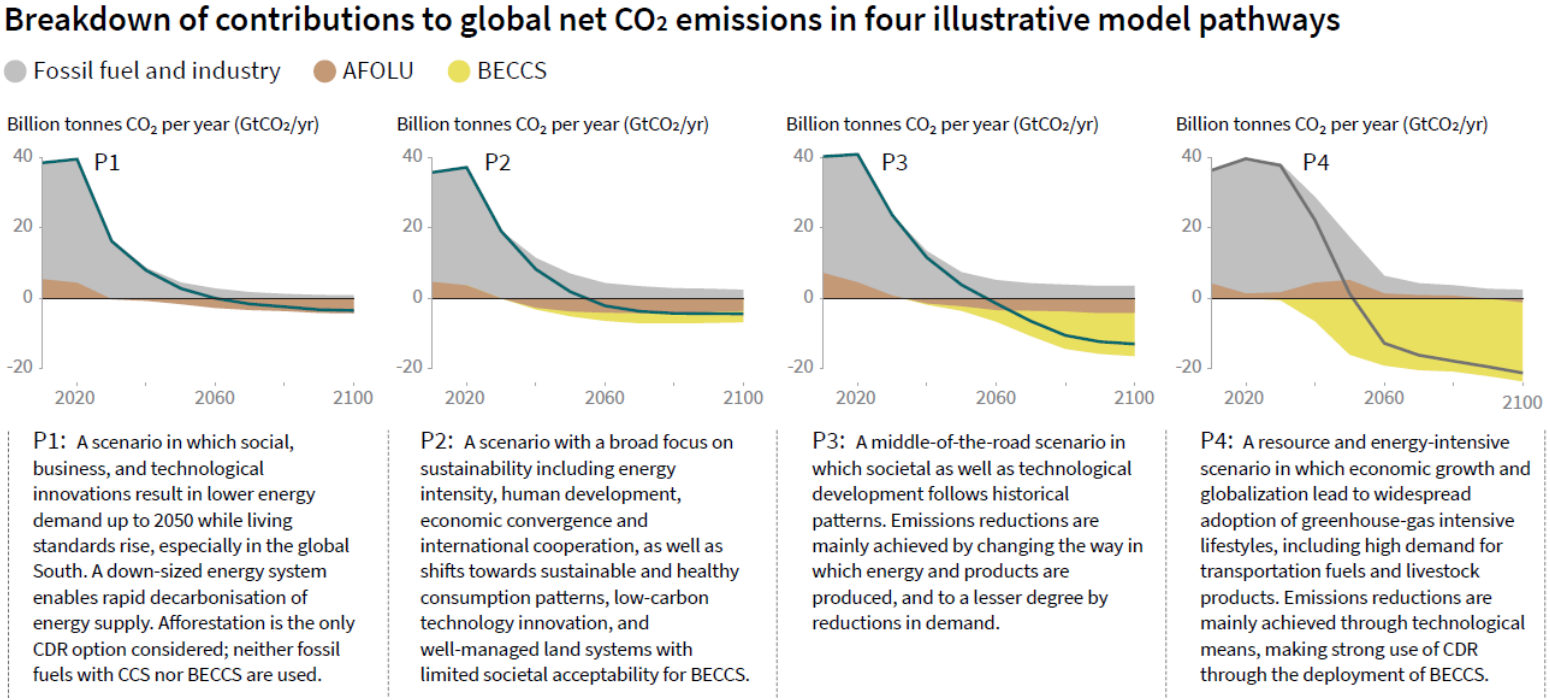
Methane and Black Carbon substantially by 2030-2050



Source: SR1.5 Figure SPM2

1.5°C Pathways: Different Pathways

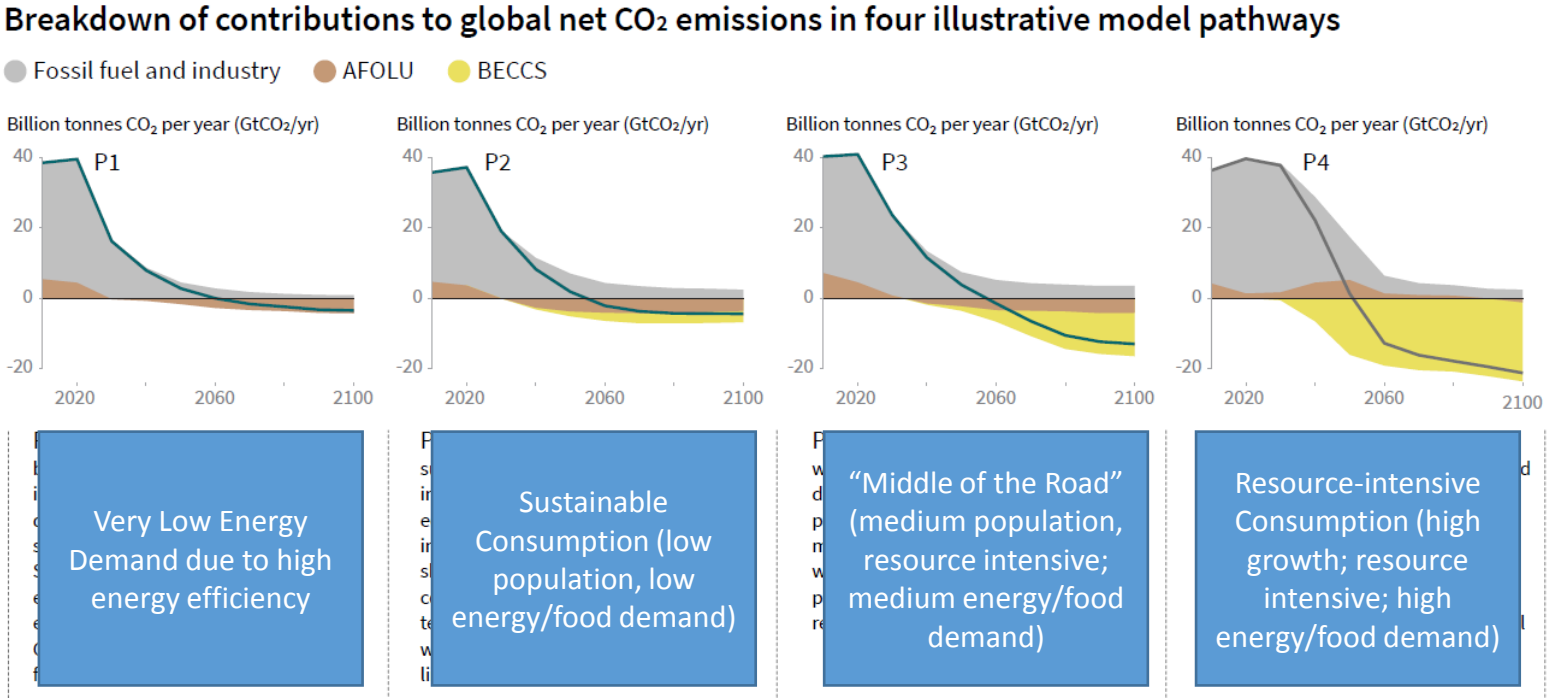
Tradeoff between near term action, CDR, and behavior, illustrated through 'archetype' pathways



Source: SR1.5 Figure SPM2

1.5°C Pathways: Different Pathways

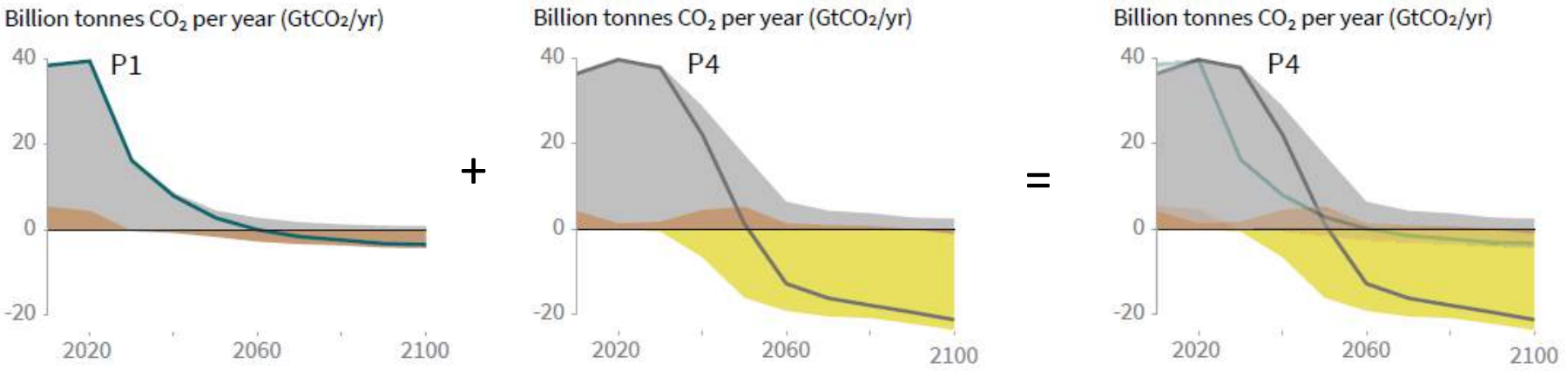
Tradeoff between near term action, CDR, and behavior, illustrated through ‘archetype’ pathways



Source: SR1.5 Figure SPM2

1.5°C Pathways: Near-term Action vs. CDR

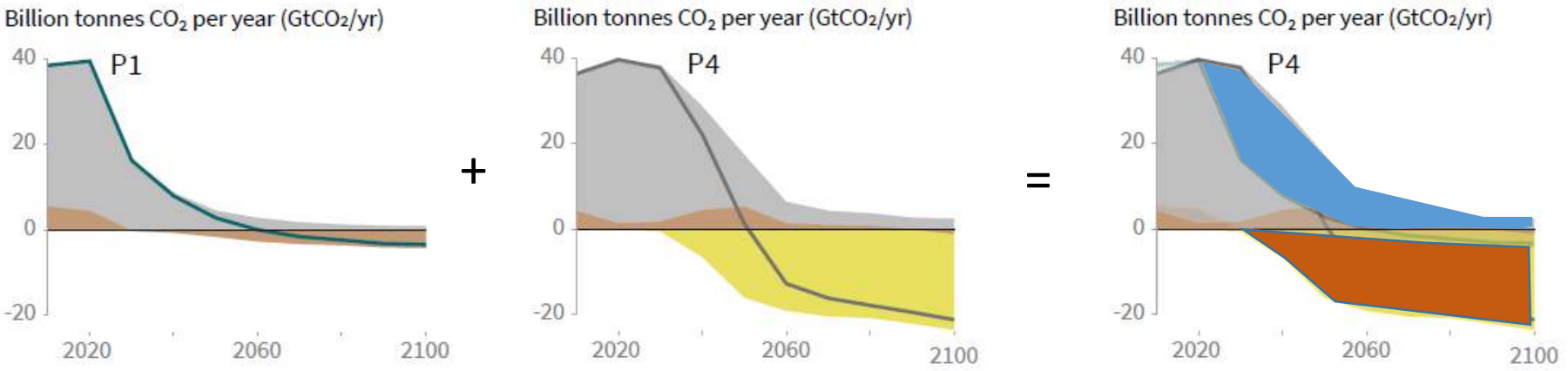
Reducing emissions less before 2030 means removing more GHGs later in the century



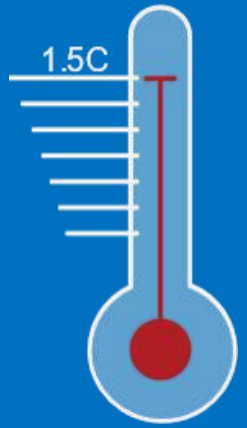
Source: SR1.5 Figure SPM2

1.5°C Pathways: Near-term Action vs. CDR

Reducing emissions less before 2030 means removing more GHGs later in the century ('what goes up must come down')



Source: SR1.5 Figure SPM2



Mitigation Pathways for 1.5°C: Key Transitions

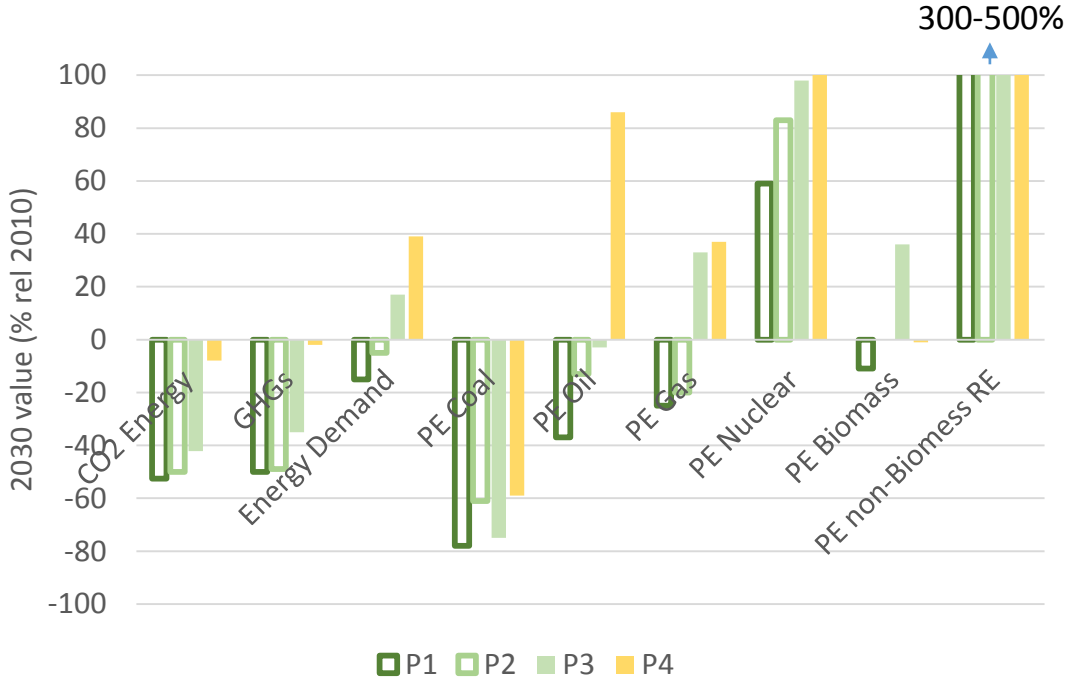
Transitions: Energy (supply)

By 2030 (12 years!)*

- CO_2/GHGs cut 40-60%
- Coal declines 60-80% in all pathways
- Renewables increase 3X-5X
- Total energy demand reduces in low-no OS
- Oil & gas vary substantially by pathway, declining in low demand pathways
- Nuclear increases substantially (But faces barriers)

Trends continue to 2050

*in low/no overshoot pathways



Source: SR1.5 Table 2.1

Transitions: Urban systems

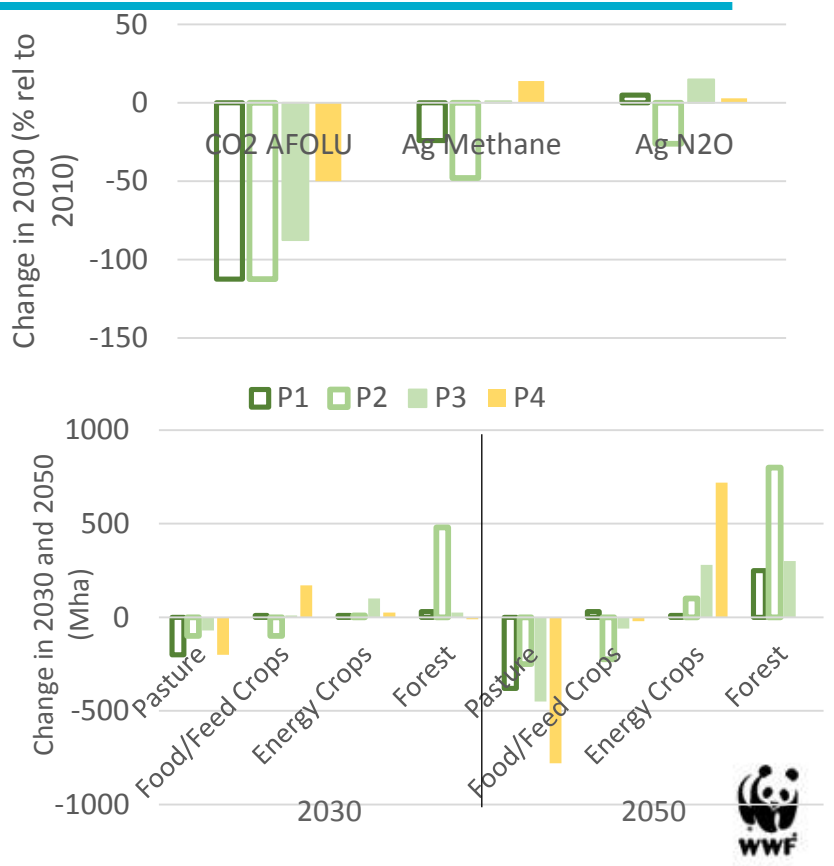
- Buildings:
  - Total energy use increases slightly or decrease, balancing access, increased demand (e.g. A/C) and efficiency
  - Significant growth in electrification (appliances, cooling)
  - Very large increases in efficiency (lighting, cooling/heating, appliances)
- Transportation:
  - Total energy use balances significant increases in demand and efficiency
  - Deep reductions require a combination of several factors:
    - Electrification
    - Energy efficiency
    - Avoided/shifted demand (e.g. greater public transport, walk/bike)
    - Biofuels in modes difficult to electrify (aviation/shipping, heavy duty road)

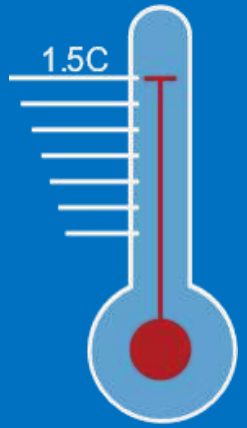
Transitions: Land and Food

By 2030 (12 years!)

- CO_2 from land (AFOLU) cut 80% to >100% (net sink) -> zero deforestation by 2030
- Agricultural emissions (CH_4/N_2O) cut by much less and mostly driven by diet changes, because:
  - Not all models assess agriculture mitigation
  - Agricultural emissions generally seen as more difficult to cut
- Land use changes depend heavily on pathway
  - By 2050 tradeoffs between land for food (pasture/ crops and land for mitigation (energy crops/forest)
  - Choice between forest and energy crops depends on overshoot

Land will be covered in detail in Special Report on Land (2019)





Implications for Companies and Science Based Targets

Implications for companies

- Companies increasingly interested in mitigation pathways for several reasons:
  - Climate-related financial risk (e.g. TCFD)
  - Aligning business with 1.5°C-2°C future: Science Based Targets
- Corporate decisions play a key role in the needed transitions
- SR1.5 provides key tools around 1.5°C-2°C transitions:
  - Updated 2°C pathways (relevant to TCFD) given requirement for a “2°C scenario analysis”
  - Key scenario data will be made available (much already public at IIASA portal)

Science Based Targets Update

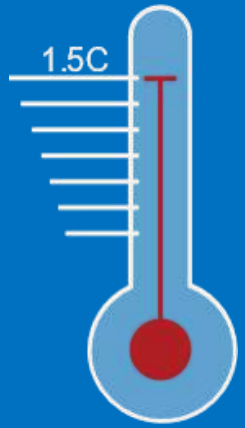
- Nearly 500 companies already signed up to set GHG reduction targets in line with Paris Agreement goals
- The Science Based Targets initiative (SBTi) recognizes the urgency in SR1.5 and supports its call for unprecedented transitions
- In coming months SBTi will:
  - Update underlying scenarios, in consultation with new Scientific Advisory Group
  - Update tools to allow companies to set 1.5°C compliant targets
- Revisions in early 2019

SCIENCE BASED TARGETS

THE GLOBAL COMPACT
CDP
DRIVING SUSTAINABLE ECONOMIES
WWF
WE MEAN BUSINESS
WORLD RESOURCES INSTITUTE

WWF

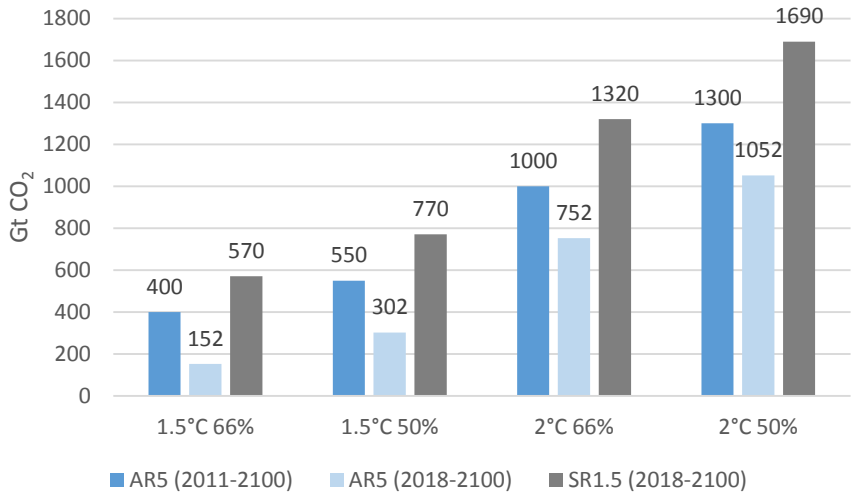
Thank You!



Backup slides

Carbon Budget Update

- Carbon budgets relative to AR5 have increased
  - ~155-275% for 1.5°C
  - ~60-75% for 2°C
- This is due to a variety of factors, including:
  - **Updated methods**: using warming to date to constrain 'remaining' budget
  - **Definitional changes**: how temperature is measured, how budget is calculated
  - **Non-CO_2 emissions**: more advanced modeling
- Significant uncertainty remains
- Changes are not a reason for delay; urgency is required!



Source: SR1.5 Table 2.2; AR5 WG3 Chapter 6