

PROSPECTS+



Greenhouse gas emissions scenario tool

Introduction to PROSPECTS+
and its potential use



Guidance developed with support from:

ICAT

INITIATIVE FOR
**Climate Action
Transparency**

Overview

1. What is PROSPECTS+?
2. How can PROSPECTS+ be used?
3. Links to other analysis
4. Case study example
5. Summary



What is PROSPECTS+?

How does it work and what
does it do?

What is PROSPECTS+?



Tool to track and calculate overall and sectoral GHG emissions trends of a country



Based on the historic and future development of relevant decarbonisation indicators



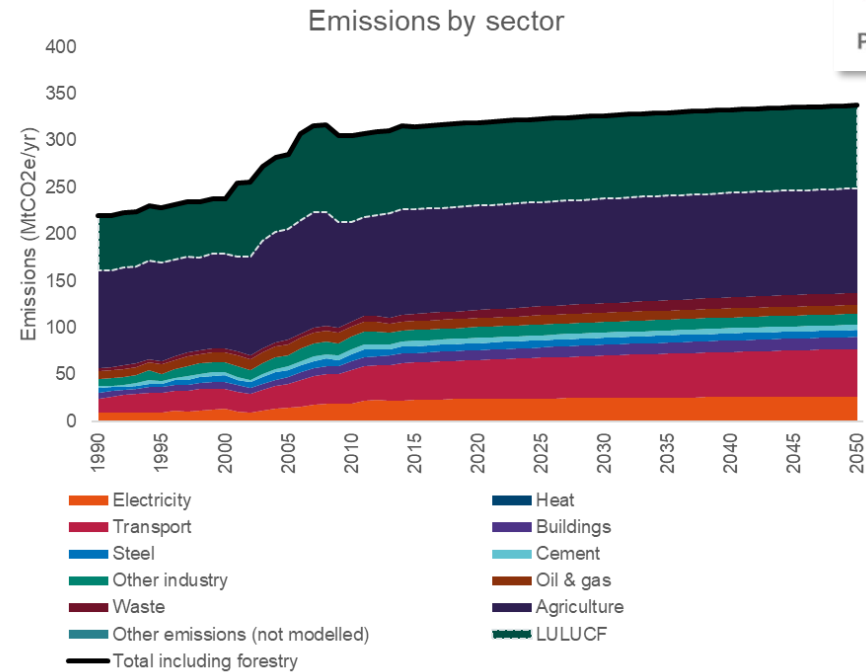
Allows users to adjust key emissions assumptions in each sector



Transparent model, readily configured to suit user needs without sophisticated programming expertise



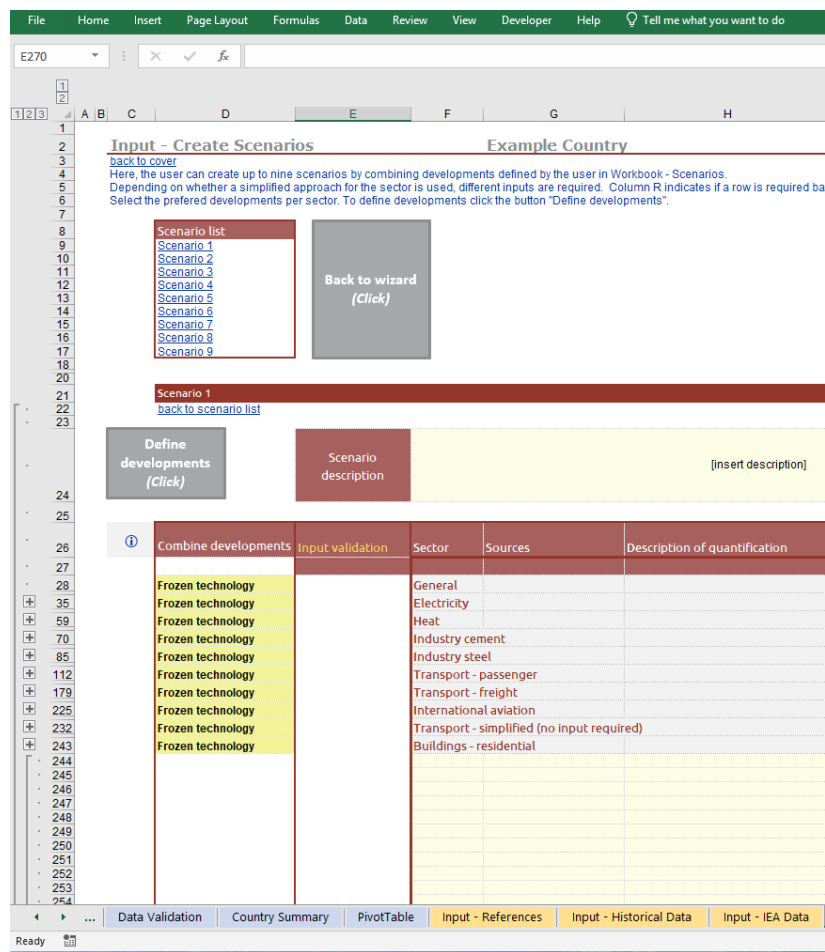
Can be used to aggregate outputs from more detailed sectoral modelling efforts or policy analysis



PROSPECTS+ was developed by NewClimate Institute and the Climate Action Tracker based on the logic of ClimateWorks Foundation's CTI models



PROSPECTS+ is Excel-based and transparent



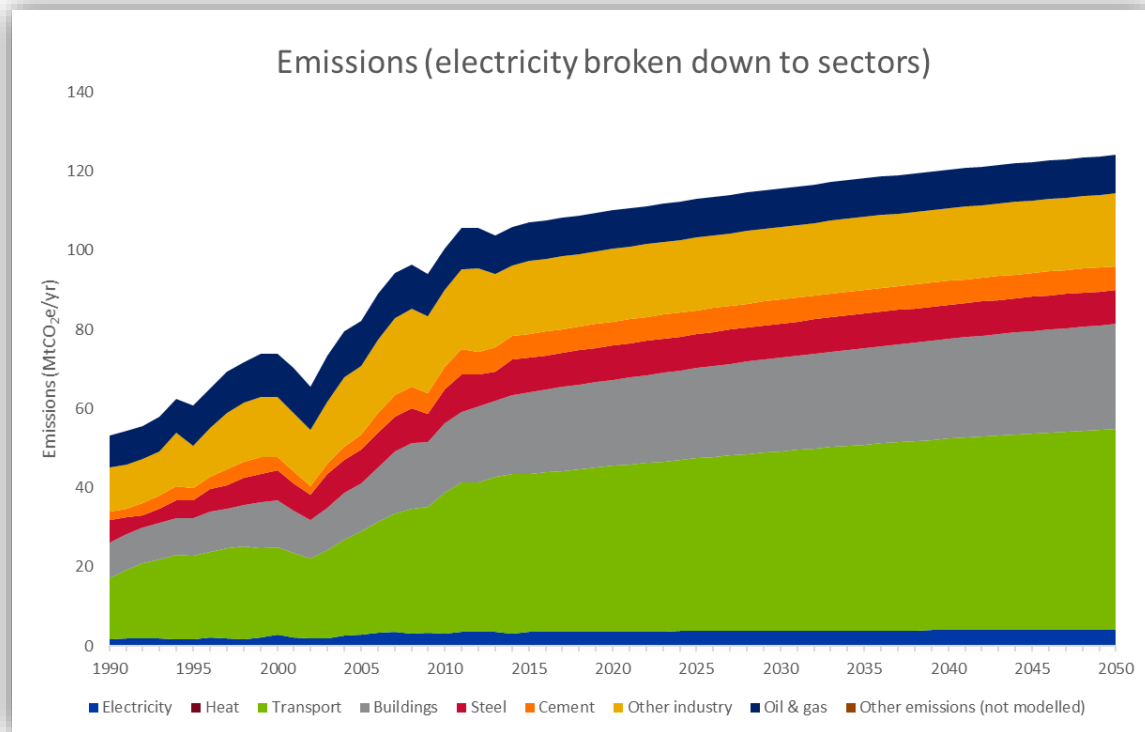
» PROSPECTS+ was created in Excel, meaning that users do **not need programming experience** to use and understand it (good working knowledge of Excel and sectoral emissions modelling recommended)

» All calculations are included in the file ensuring full **transparency**

» PROSPECTS+ is available **open-source**

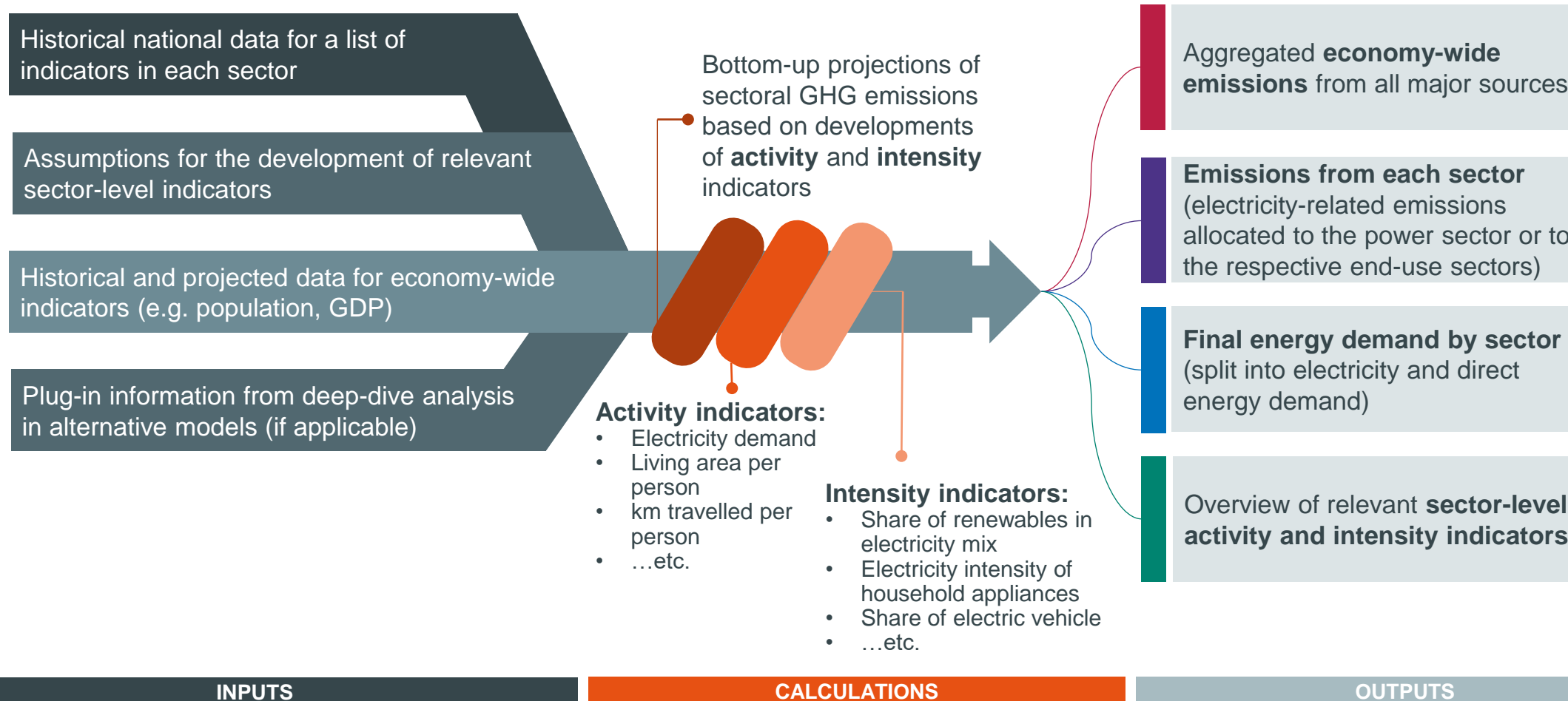
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Develop bottom-up emissions scenarios



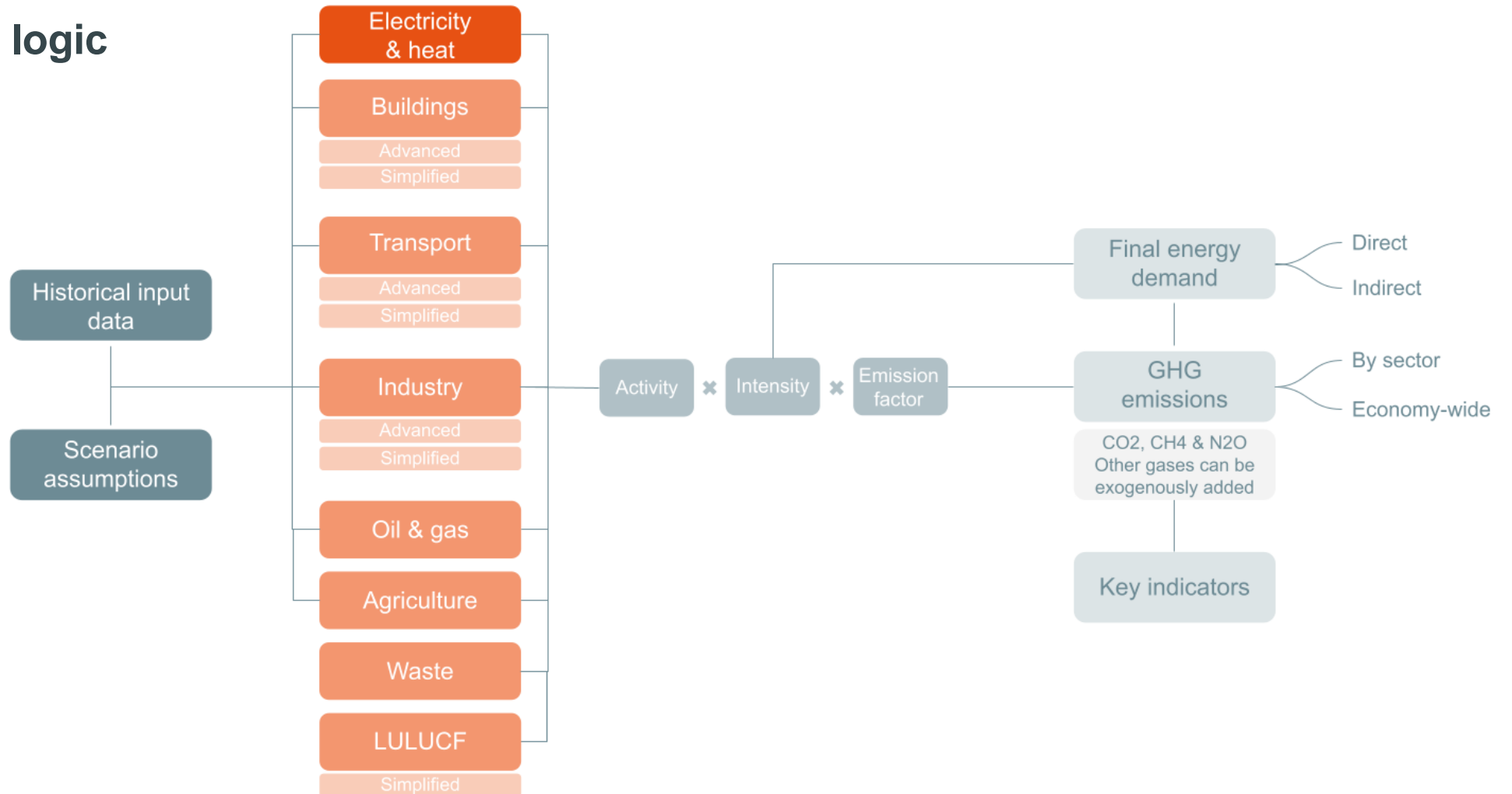
Users can create **transparent, bottom-up** historical and future greenhouse gas emission scenarios for all **major emitting sectors** between 1990 and 2050

PROSPECTS+ inputs, calcs and outputs



Covering major emitting sectors

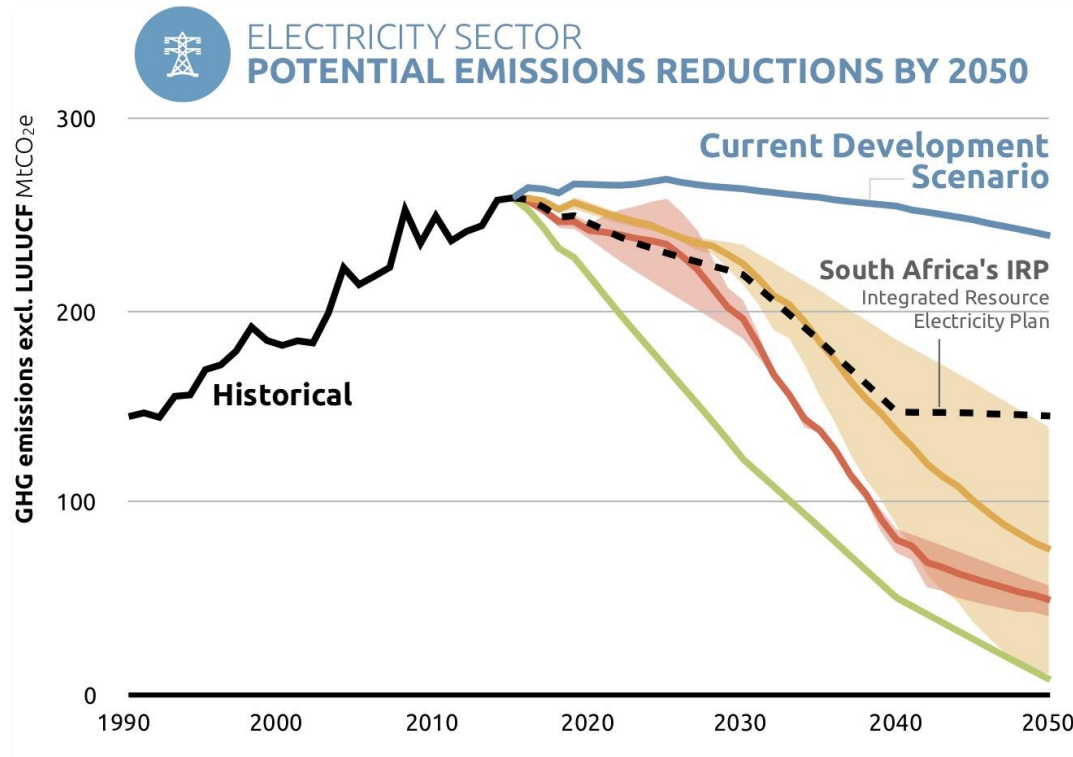
PROSPECTS+ logic



How can PROSPECTS+ be used?

Types of analysis and
application of results

Develop scenarios and long-term visions



Example from Scaling up climate action in South Africa (CAT, 2018)

» Users can develop **emissions scenarios**: for example,

- **business-as-usual** scenarios,
- **current policies** scenarios,
- **climate target** scenarios, or
- **low-carbon development** scenarios

» PROSPECTS+ is particularly useful for creating a **high-level, long-term vision** of a **low-carbon economy**

Identify policy areas and quantify policy impacts



» PROSPECTS+ can be used to

- Identify the **sectoral pathway** needed to move to decarbonise the economy or **meet climate targets**
- Link results to additional analysis to quantify **policy measures** needed to meet targets (e.g. share of electric vehicles, share of variable renewables or energy efficiency standards in buildings)
- Evaluate a selection of energy security indicators derived from scenarios and linked to separate non-climate impact tools

Facilitate dialogue

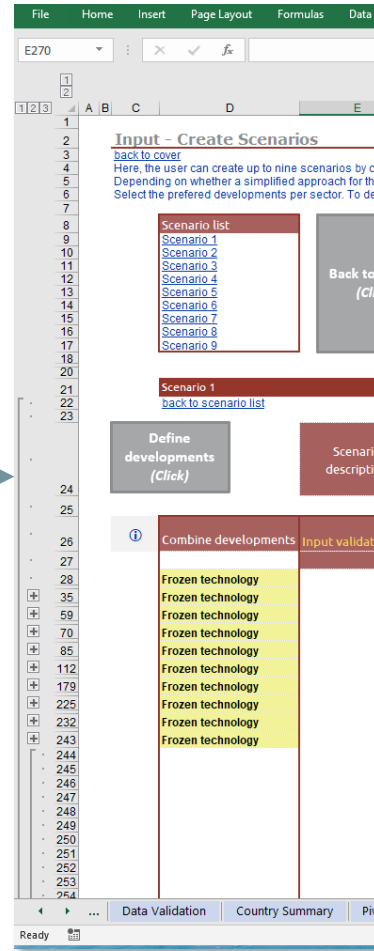
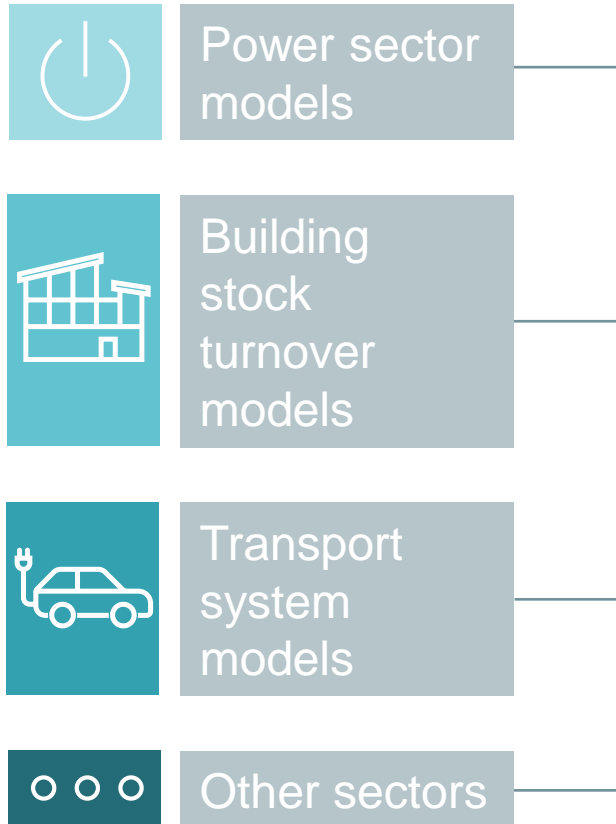


» The policy-relevant indicators in PROSPECTS+ can **provide a basis for dialogue** within and between:

- climate change ministries
- sector-specific ministries
- relevant stakeholders in specific sectors

Aggregate and bookkeep

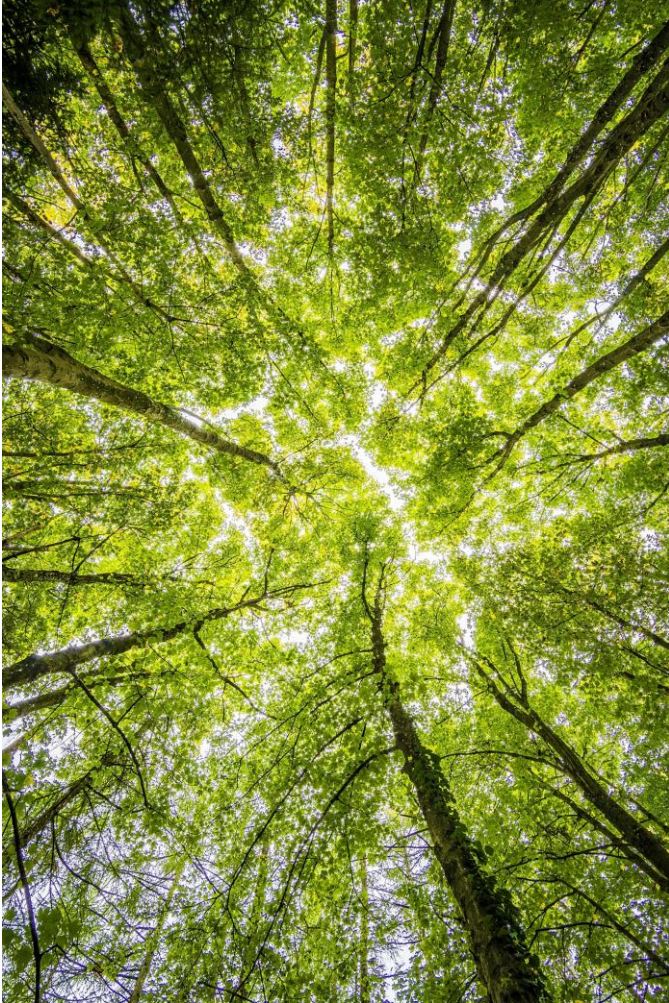
For example:



» PROSPECTS+ can be used to aggregate outputs from more detailed sectoral modelling efforts or policy analysis in a **transparent, structured, and accessible** manner



- » Projections can feed into development of **Biennial Transparency Reports** or **Nationally Determined Contributions**
- » Results are presented and categorised in **alignment with all key IPCC source/sink categories** (2006 IPCC guidelines)



PROSPECTS+ **user groups** include

- » Climate change directorates or similar institutions that are responsible for climate change issues at national or subnational levels
- » Climate change focal points in line ministries
- » Analysts, researchers, NGOs with intermediate Excel skills
- » People with or without programming expertise (good working knowledge of Excel and sectoral emissions modelling recommended)

Note:

Use of the tool requires intermediate Excel skills as well as a good understanding of modelling emissions across different sectors.

An accompanying PROSPECTS+ user guide provides further introductory information on how to set up and apply the tool. Analysts are likely to benefit from further, more detailed, training in addition to reviewing the guidance in order to ensure a full understanding of how the model works and the suitability of its use for a given situation.

Limitations of PROSPECTS+



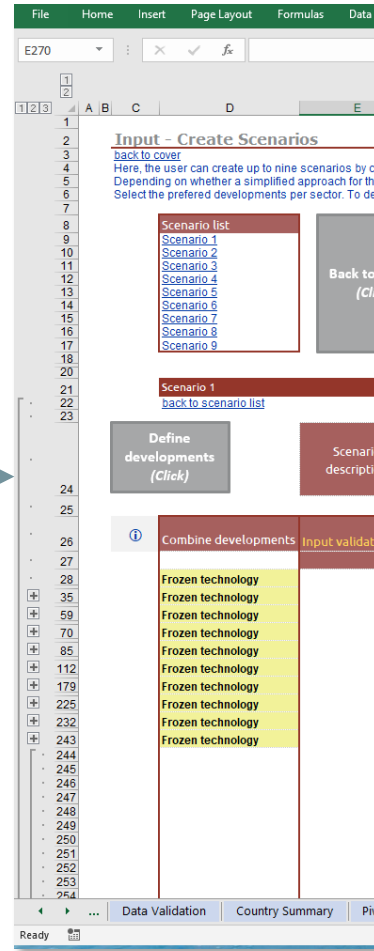
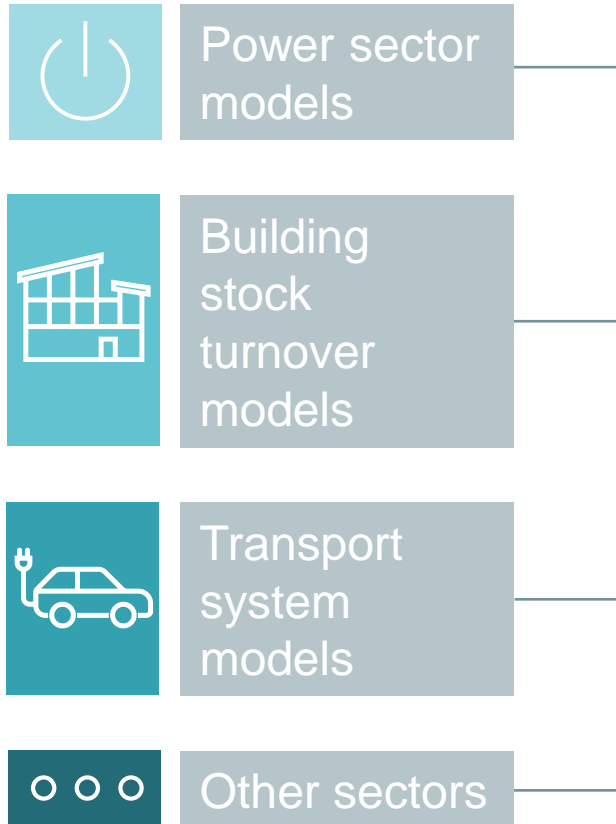
- » PROSPECTS+ does not facilitate cost-driven analysis. It is **not possible to include cost estimates** for different technology options or scenarios.
- » There is **no optimisation functionality**, either to minimise costs or emissions
 - Representation of the power sector is simple, e.g. it does not simulate capacity expansion, detailed dispatch or system balancing requirements
 - Economy-wide emissions scenarios are developed bottom-up by the user
- » Set up of model relies on **IEA input data on energy balances, which requires a (paid for) user license**
 - If needed, IEA inputs can be replaced by national data with similar level of detail
- » The tool does not automatically create **GHG inventories** for reporting to the **UNFCCC** (but can be used to support reporting)

Links to other analysis

Use PROSPECTS+ results to link detailed sectoral modelling or feed into analysis of sustainable development impacts

Detailed sectoral models

For example:



» PROSPECTS+ can **use input data** from detailed **sectoral modelling exercises** of other tools, strengthening the robustness of the analysis and facilitating sectoral interlinkages

PROSPECTS+ is part of NewClimate's tool offering to navigate climate action impacts

Climate action Outcomes and mitigation policy assessment toolbox

Selection of **climate scenario modelling tools** developed by NewClimate Institute to support decision-makers, analysts and civil society to **assess and understand the impacts of climate action and policies**

Principles of tool development

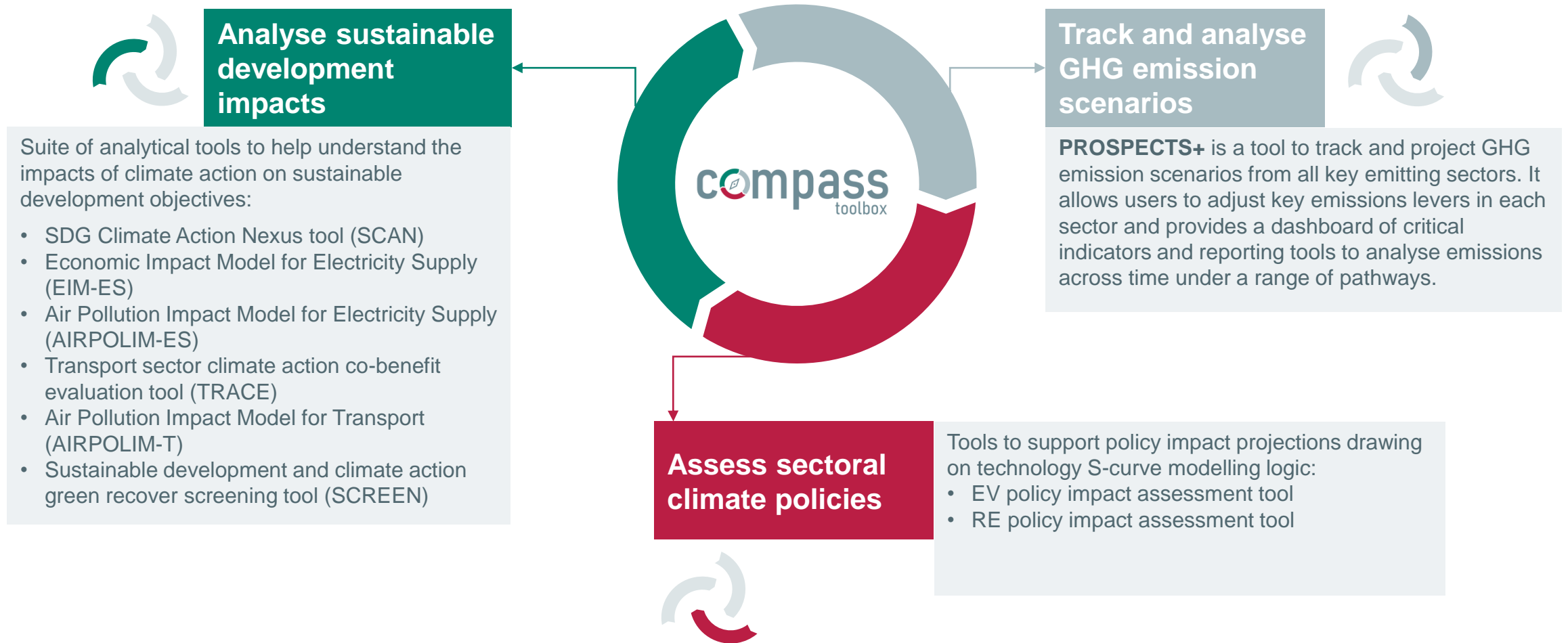
- **Publicly available** // free // open-source
- **Accessible** to a range of users with different levels of technical expertise
- **Transparent** inputs, assumptions, calculations and outputs
- **Improve access to information** to assist informed, evidence-based decisions
- **Address modelling gaps**; avoid duplication
- **Enable raising climate ambition** by exploring opportunities and barriers

Common features across tools

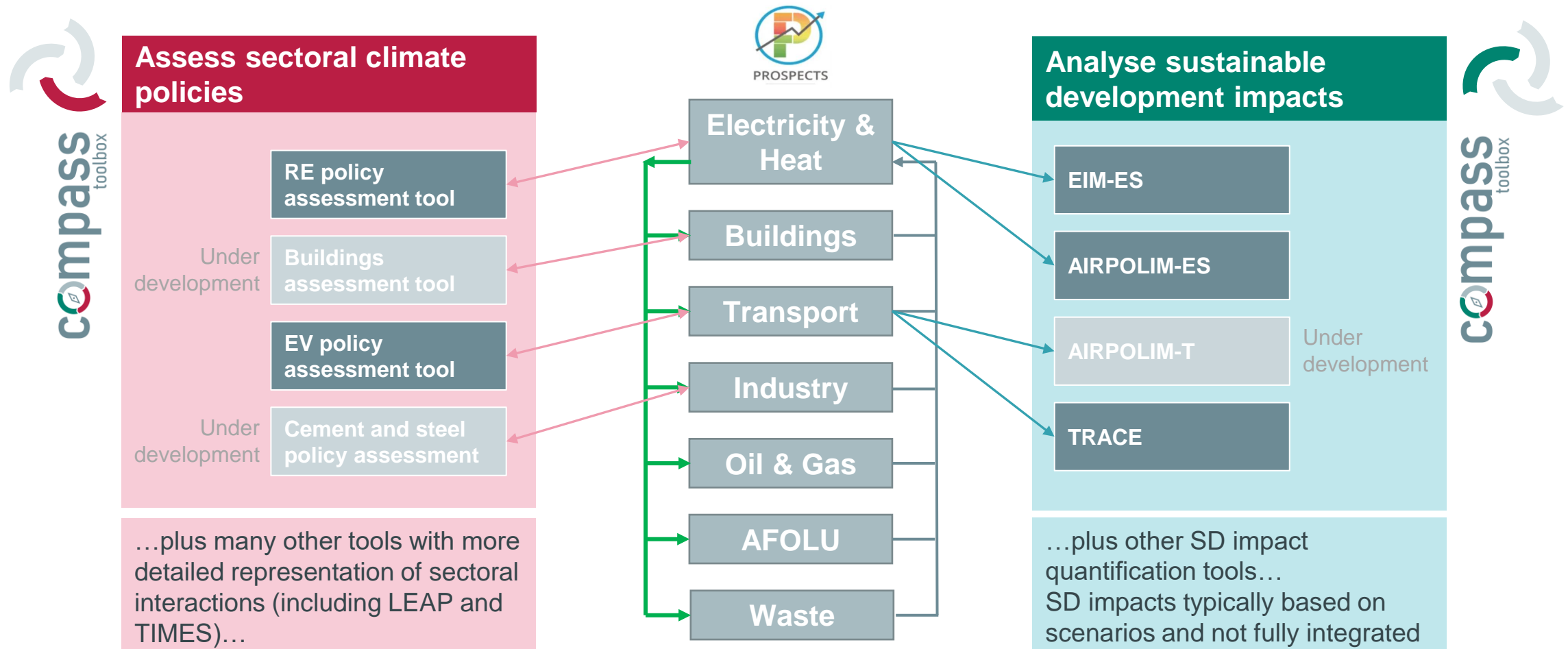
- **Focused on impacts** of actions and policies to mitigate climate change
- **Modular setup**, designed to be used either as *standalone* tools; or with *soft links* to other Compass tools and/or third party models
- **Excel-based** analytical tools
- **Facilitate comparison** across different scenarios / policies / outcomes
- **Explore** potential opportunities and barriers to raise climate ambition

<https://newclimate.org/expertise/compass-toolbox/>

COMPASS: navigating climate action impacts



PROSPECTS+ can act as a shell tool for linking sectoral and non-climate deep-dive analysis





Case study example

Practical application of
PROSPECTS+

Scaling Up Climate Action Series



Aimed to **raise ambition to close the gap** between current emissions projections and pathways compatible with the Paris Agreement through:

- » The identification of **policy options for increased sectoral action**
- » Estimate the **impact** of those actions on **emissions** and other **benefits**
- » Relevant to Parties considering revisions to their NDCs LTSs

» Geographical **scope**





- South Africa
- European Union
- Argentina
- Indonesia
- Turkey
- Australia

<https://climateactiontracker.org/publications/scalingup/>

Scenario analysis



» Four scenario categories developed in PROSPECTS+

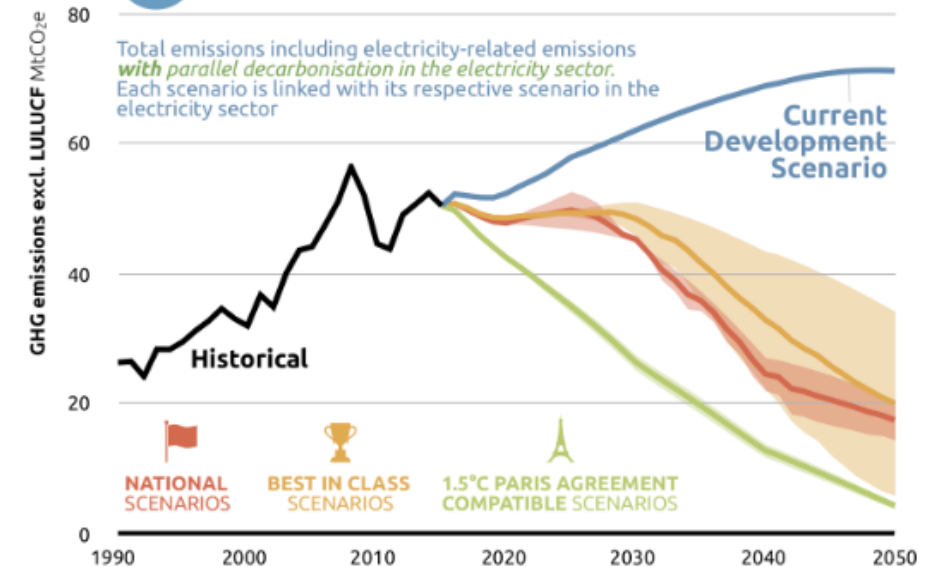
Scenario categories	Definitions
1  NATIONAL SCENARIOS	Scenarios based on national research and country-specific studies (analysed for some sectors)
2  BEST IN CLASS SCENARIOS	Scenarios based on best practices implemented by regional or international frontrunners (analysed for some sectors)
3  1.5°C PARIS AGREEMENT COMPATIBLE SCENARIOS	Scenarios based on sectoral developments in line with the Paris Agreement's temperature limit.
4  CURRENT DEVELOPMENT SCENARIO	Reference scenario used for comparison purposes. The scenario is based on the continuation of current trends and policies until 2050.

» Focus on the analysis of **identified key sectors**

- Power sector
- Passenger transport in key urban areas
- Residential building sector



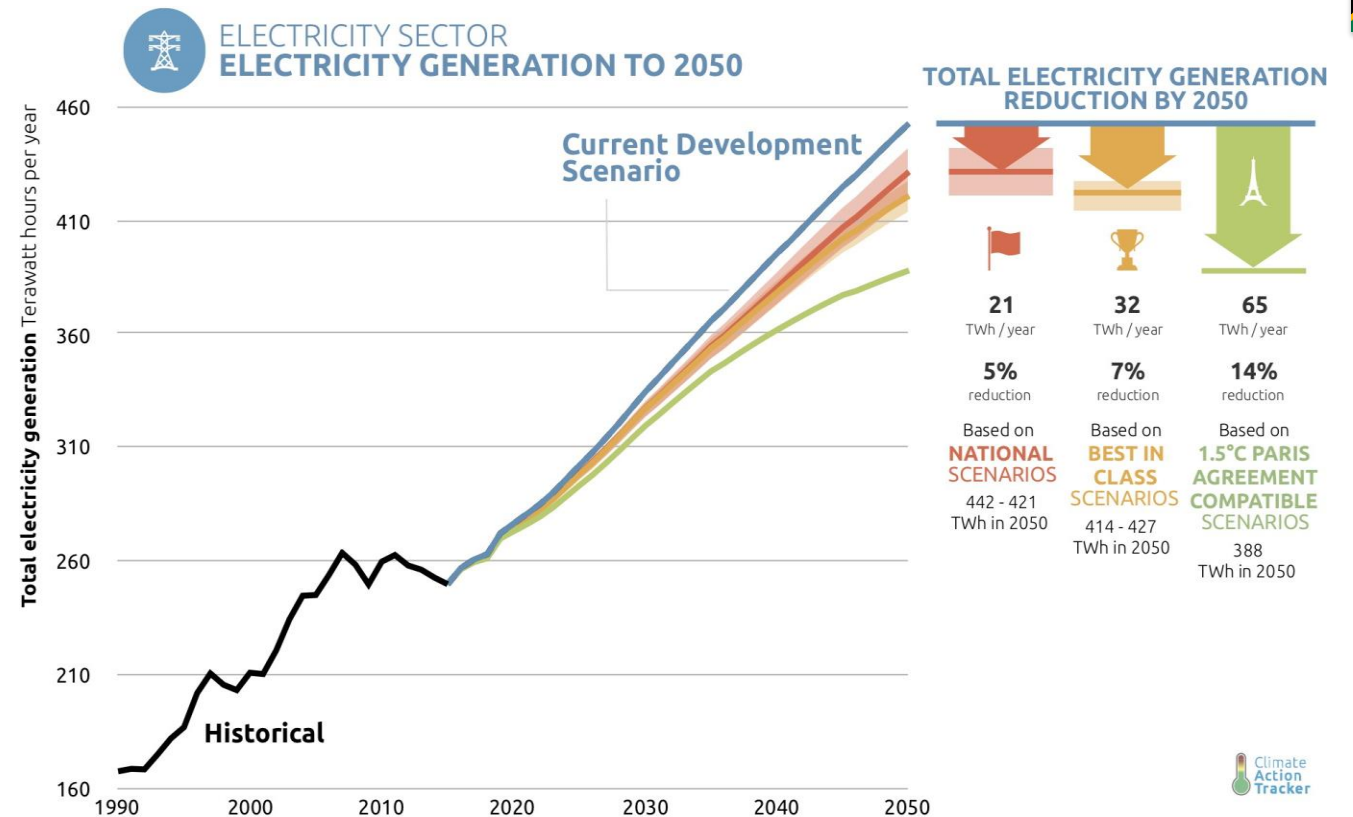
RESIDENTIAL BUILDINGS SECTOR



Inter-linkages between sectors



» PROSPECTS+ captures inter-linkages between sectors such as a rise in electricity demand due to an increased electrification rate for end use sectors (e.g. transport and buildings) and population growth

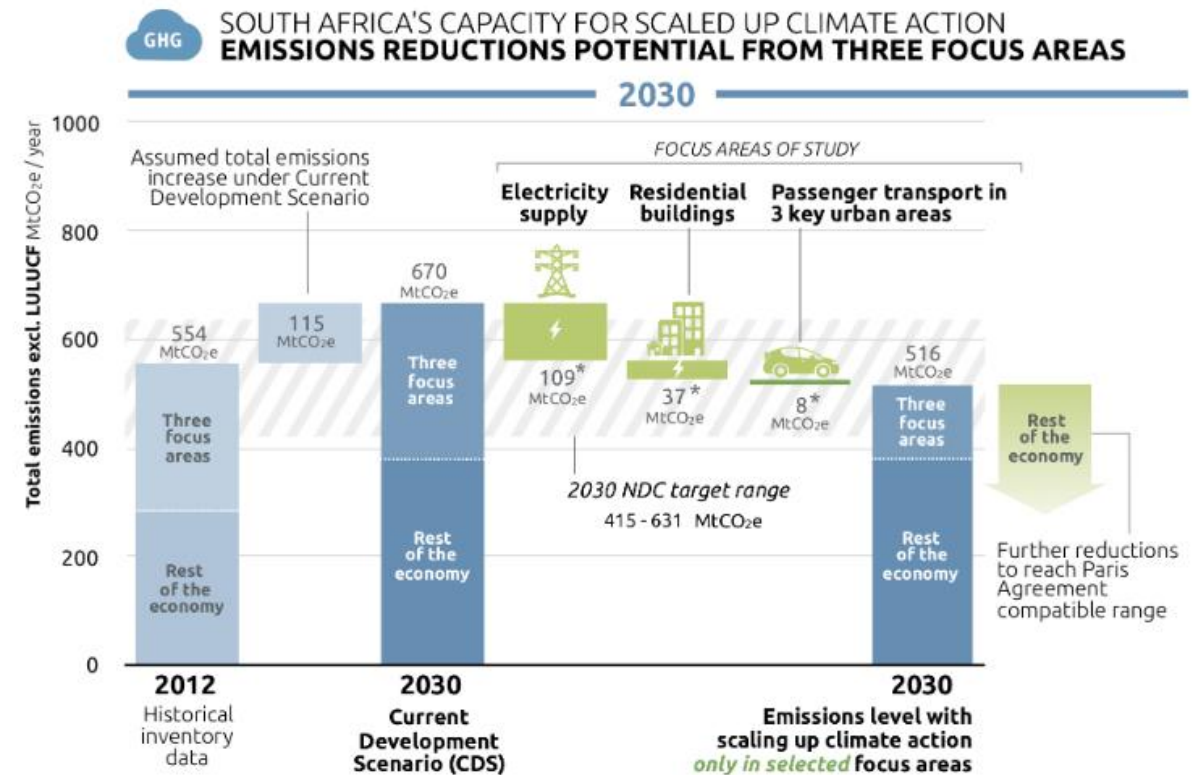


Analysis of potential impact on emissions



- » Analysis of the overall **impact on emissions** from specific sectoral measures for 2030 and 2050
- » Identification of **indicator levels** for scaled up climate action

	Current Development Scenario (CDS)	National scenarios	Best-in-class scenarios	1.5°C Paris Agreement Compatible scenario
Share of renewables in total electricity	3% by 2015	-	-	-
	17% by 2030	33–38% by 2030	24–28% by 2030	47%–54% by 2030
	23% by 2040	66–69% by 2040	37–64% by 2040	58% ¹ –74% by 2040
	29% by 2050	76–85% by 2050	51–95% by 2050	69%–94% by 2050
References	Based on PROSPECTS South Africa tool developed by Climate Action Tracker (2018)	Based on 'Moderate Demand Scenario' analysis by Steyn et al. (2017) and 'Least Cost Scenario' by Wright et al. (2017)	Based on s-curve vRES update approach by Cornet et al. (2018) and values identified in the literature (Fekete et al., 2015)	Based on 'Decarbonised Scenario' by Wright et al. (2017) and IPCC Special report (IPCC, 2018)



Link to sustainable development impact analysis

» PROSPECTS+ outputs were **linked** to EIM-ES tool to analyse **job creation** in the value chain of power supply across different scenarios

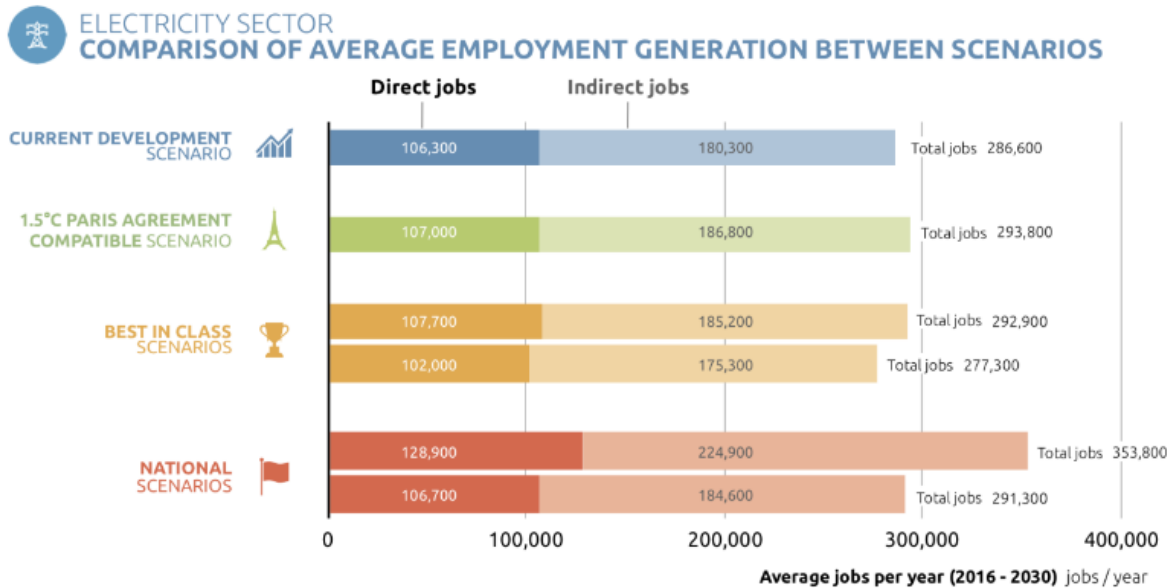
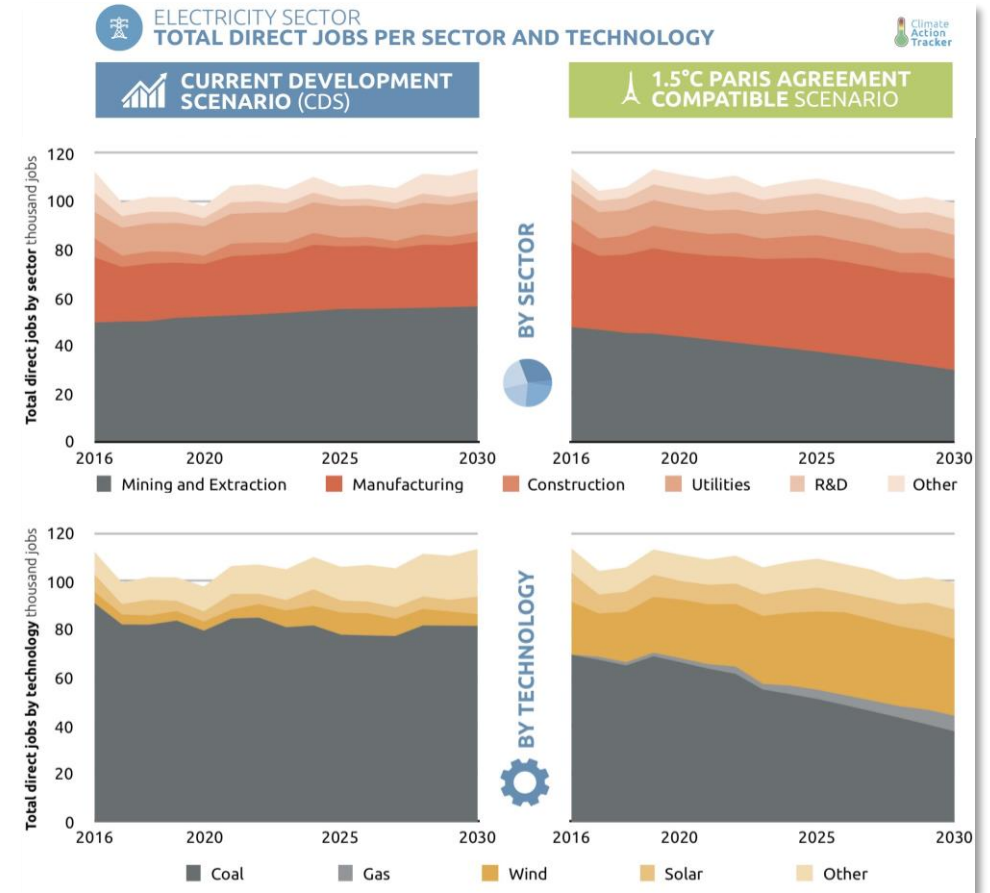


Figure 14: Average direct employment generation per year between 2016–2030 (orange) and average total employment generation per year between 2016–2030 (grey) in South Africa for different electricity generation scenarios.





Summary

Key takeaways

PROSPECTS+

- » Open-source, excel-based bookkeeping tool and simplified energy system model
- » Used to create **transparent, bottom-up** historical and future **energy and greenhouse gas emissions pathways**
- » Based on policy-relevant activity and intensity indicators
- » For all **major emitting sectors**

Use cases

- » Creating **scenarios** and **long-term visions**
- » Identifying policy areas and quantifying **policy impacts**
- » Facilitating communication
- » Aggregating and bookkeeping
- » Reporting

User groups

- » Climate change directorates or similar institutions
- » Climate change focal points in line ministries
- » Analysts, researchers, NGOs

For further information: www.newclimate.org/2018/11/30/prospects-plus-tool/

QUESTIONS / COMMENTS / FEEDBACK

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