

The background of the slide is a photograph of industrial machinery, likely a large mill or crusher, with a prominent circular component featuring a series of small, pointed teeth or bolts. The machinery is painted in shades of grey and orange. A blue rectangular box is overlaid on the left side of the image, containing the title and presenter information.

Training on Adjusted Macroeconomic Indicators – 4 Policy Implications

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WAVES Training on Macro-economic Indicators

1. Adjusted macroeconomic and wealth indicators
2. Calculating ANNI and ANS
3. Comprehensive wealth
4. **Practical & Policy Implications**
 1. **Policy Indicators**
 2. **Next steps**



Policy-related indicators

Indicators to add to sustainable development monitoring framework

Adjusted Net National Income

Carry out annual calculations

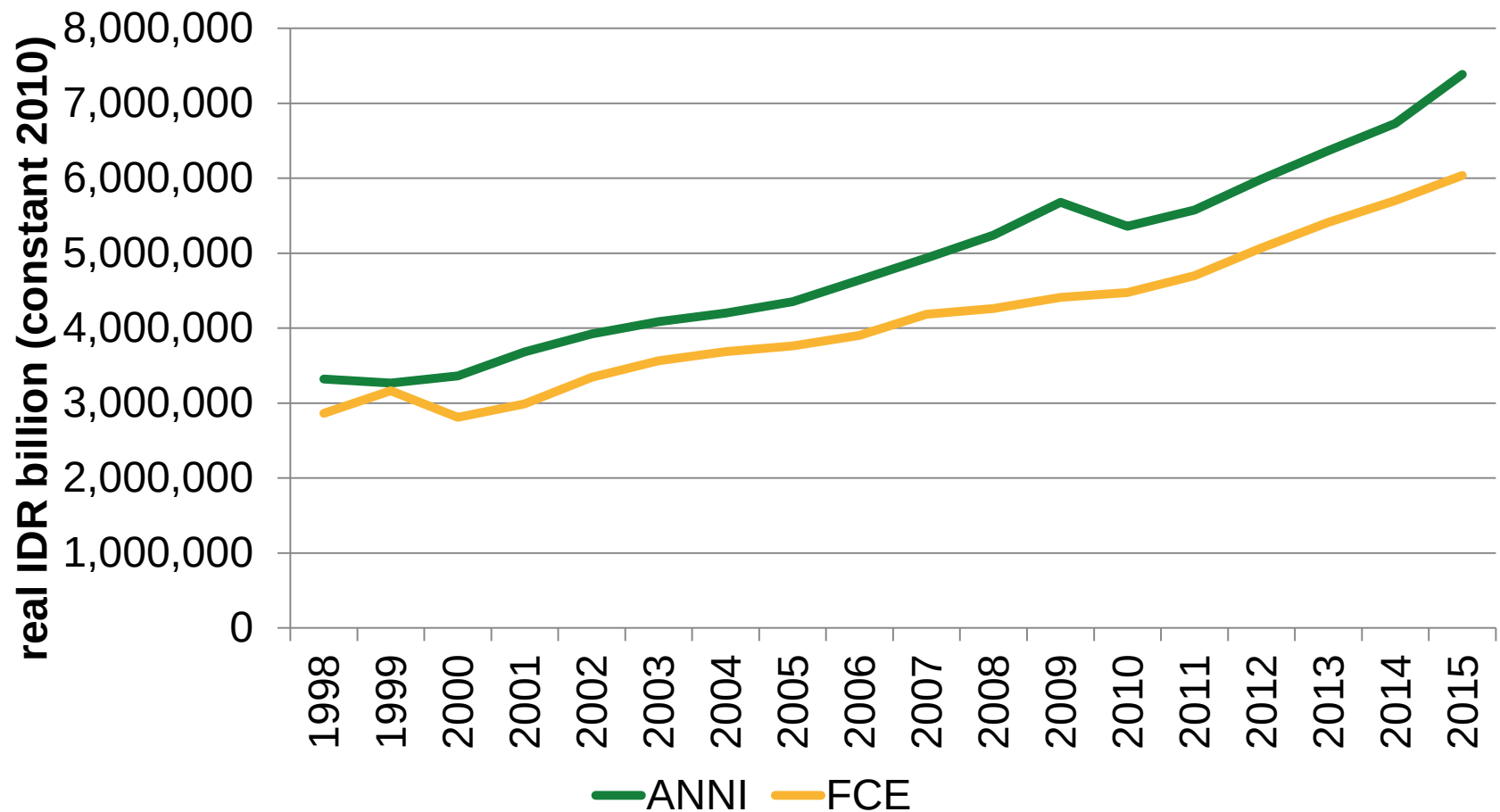
Compare real growth rate with GDP/GNI growth

Interpretation: if ANNI growth is lower, some GDP/GNI growth is arising from resource depletion

Compare ANNI with final consumption expenditure

Interpretation: if the gap between the two is negative and widening, then consumption is being maintained by consuming capital, which is unsustainable. If $ANNI > FCE$, then saving is taking place (linked to +ve ANS).

Policy-related indicators: ANNI & FCE



Policy-related indicators

Adjusted National Savings

This is the key flow indicator.

Can be calculated annually (in absolute terms and as % of GNI) (albeit with a lag due to some data delays).

ANS is the key indicator that indicates whether a country's growth is on a sustainable path.

Is ANS positive or negative?

If ANS is negative, consumption is arising from asset depletion (and in the long term will be unsustainable)

If ANS is positive, national wealth is being accumulated (and consumption is sustainable).

If ANS is positive but declining as a share of GNI, then there may be a warning sign of an unsustainable trend (a continued decline would eventually lead ANS to turn negative).

Policy-related indicators

Measures of Comprehensive Wealth:

- Total wealth (in real terms);
- Total real wealth per capita
- Total wealth (as % of GNI)

CW has an advantage over ANS in that it includes a wider range of assets

But some of the inputs to CW may not be available annually, so it may not be possible to update CW each year (unlike ANNI and ANS).

So CW is more of a medium-long term indicator. ANS is the key short-term indicator, as it is available annually.

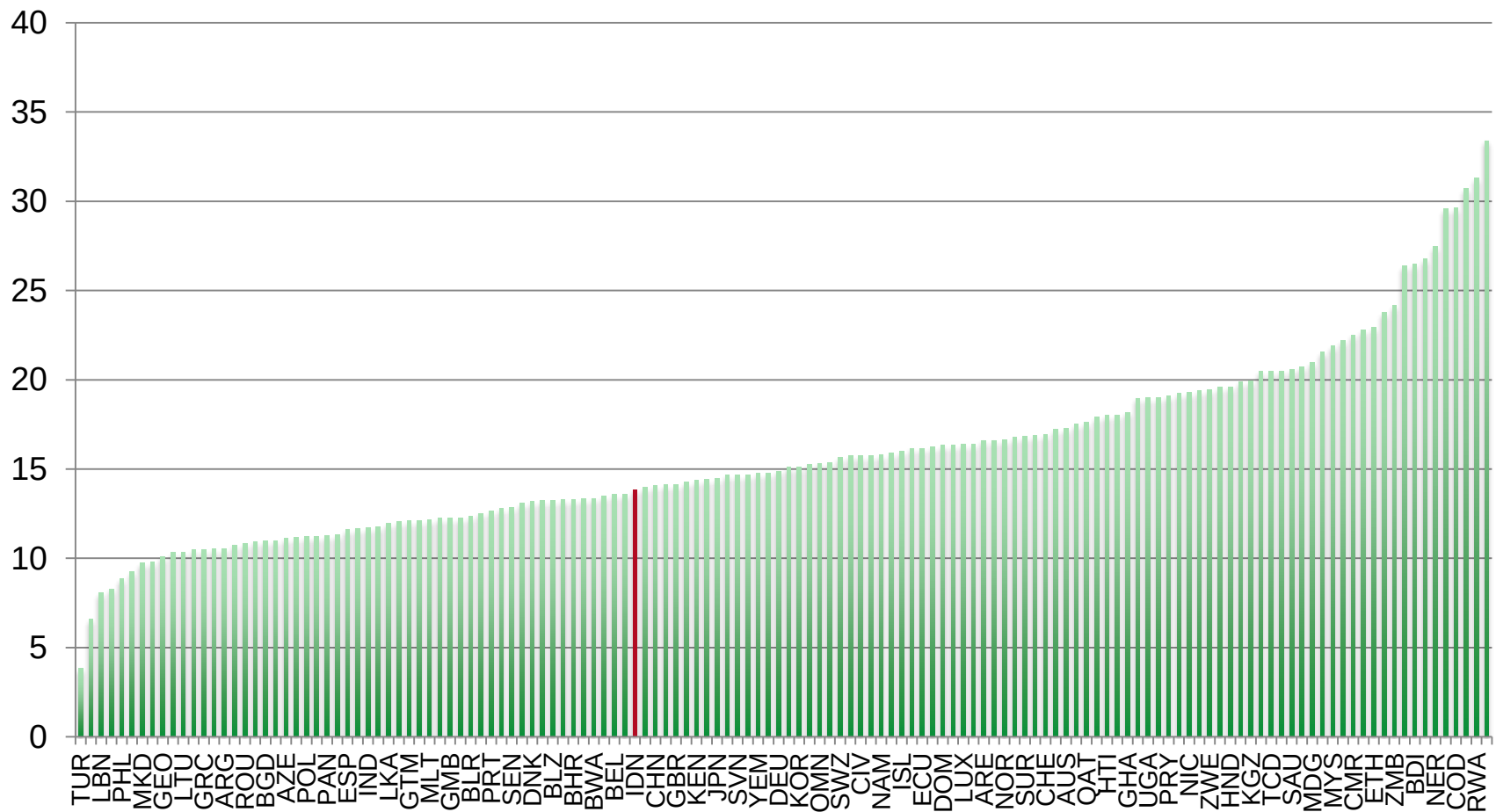
Policy-related indicators

Measures of Comprehensive Wealth: Interpretation:

CW per capita: It should be a policy objective to increase real wealth per capita. There is a clear relationship between wealth per capita and real incomes. This requires that real ANS grows faster than the population.

CW as % of GNI: the level of this indicator is not in itself crucial – a high level may indicate high CW, or low GNI. It may also just reflect the structure of an economy (e.g. resource-based or not). For relatively low income countries, the expectation is that the long-term trend will be downwards (i.e. GNI is rising faster than wealth, which indicates increasing productivity).

Ratio of comprehensive wealth to GNI (WB)



Policy-related indicators

Measures of Comprehensive Wealth: Interpretation:

Resource economies: It is particularly important in resource economies (minerals, energy) that CW is not depleted – i.e. mineral/energy assets must be replaced by produced/human K as they are run down.

Composition of comprehensive wealth: the general expectation is that the share of Human K will increase over time (i.e. human K will grow faster than other assets); there is no target, but if this is not happening there needs to be an explanation (which could be a data issue);

Summary of key indicators

Variable	Measure
Adjusted net savings	ANS (real)
	ANS (% of GNI)
	ANS (real, per capita)
Adjusted net national income	ANNI (real)
	ANNI (real, growth)
	ANNI (% of GNI)
	ANNI (% of FCE)
Comprehensive wealth	Total, real
	Total, real per capita
	Total, % of GNI
	% contribution from different sources

Natural Capital Accounts and Fiscal Policy

NCA can contribute to fiscal policy in two ways:

- Identifying the fiscal potential of natural capital, e.g. mining specific taxation

- Utilising fiscal policy to change incentives and behaviour (e.g. imposing taxes to compensate for externalities), and raise funds for compensation for environmental damage

Illustration: Using mineral accounts to assess effectiveness of mining taxation

Mineral rents

represent the surplus value of mineral revenues over the costs of production

the true value of the unmined natural resource

some countries treat this as a “national” resource that should be taxed highly to ensure that the value of this resource flows back to the nation (rather than flowing to private owners) [note that this still leaves sufficient profits in the hands of private owners of mineral resources]

we can evaluate how effectively minerals taxation appropriates mineral rents

Using NCA to promote sustainability in a mineral economy

Three fiscal (public finance) policy challenges:

1. **TAXATION:** Design a taxation system that appropriates mineral rents to the nation, while leaving the owners of factors of production with a return for inputs, including a reward for risk
2. **SPENDING:** Ensure that mineral revenues are spent on asset accumulation (investment) and not consumption (fiscal rules)
3. **INVESTMENT:** Ensure that investment is productive (generation of income to replace minerals in future)

Fiscal Policy: Expenditure & Savings

Key decisions:

- **How much to invest and how much to consume?**
 - *(Hartwick rule says proceeds of taxation of rents – i.e. resource depletion - should all be reinvested)*
- **How to divide investment between types of assets:**
 - *Physical assets*
 - *Human capital (education)*
 - *Financial assets*
- **How to manage government's financial assets?**
 - *Sovereign Wealth Funds*
 - *Domestic / offshore mix*

Implementation of Hartwick Rule in Botswana: Sustainable Budgeting

1. Fiscal mineral revenues should be invested

1. i.e. should not be spent on recurrent items

2. Public investment includes:

1. Fixed assets (roads, infrastructure, buildings etc.)
2. Human capital (education and health spending)
3. Accumulation of financial assets (by Govt.)

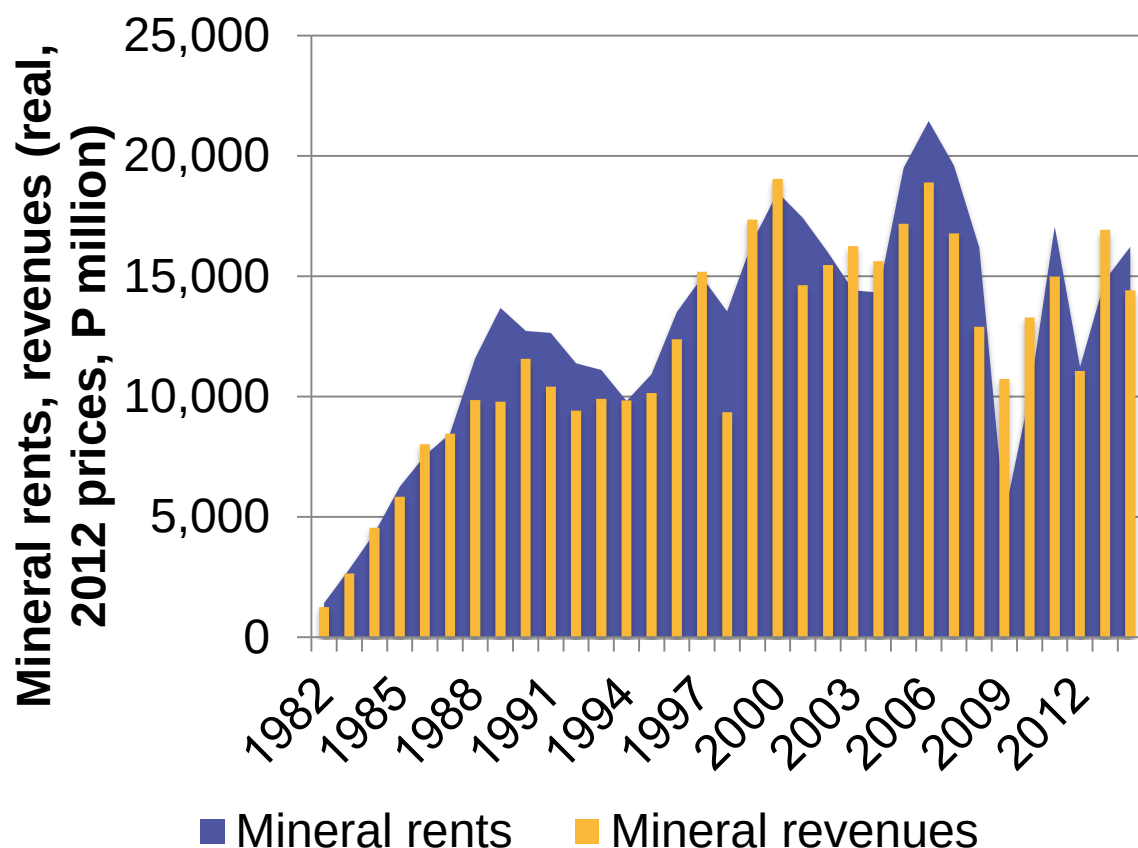
3. Measured by:

1. Aggregate public investment (development) spending, plus
2. Recurrent spending on education and health (i.e. human capital)

4. Sustainable Budget Index

1. Ratio of non-investment spending to recurrent revenues (should be less than 1)

Mineral rents and fiscal policy – how well did Botswana do?



Mineral revenues have tracked rents well

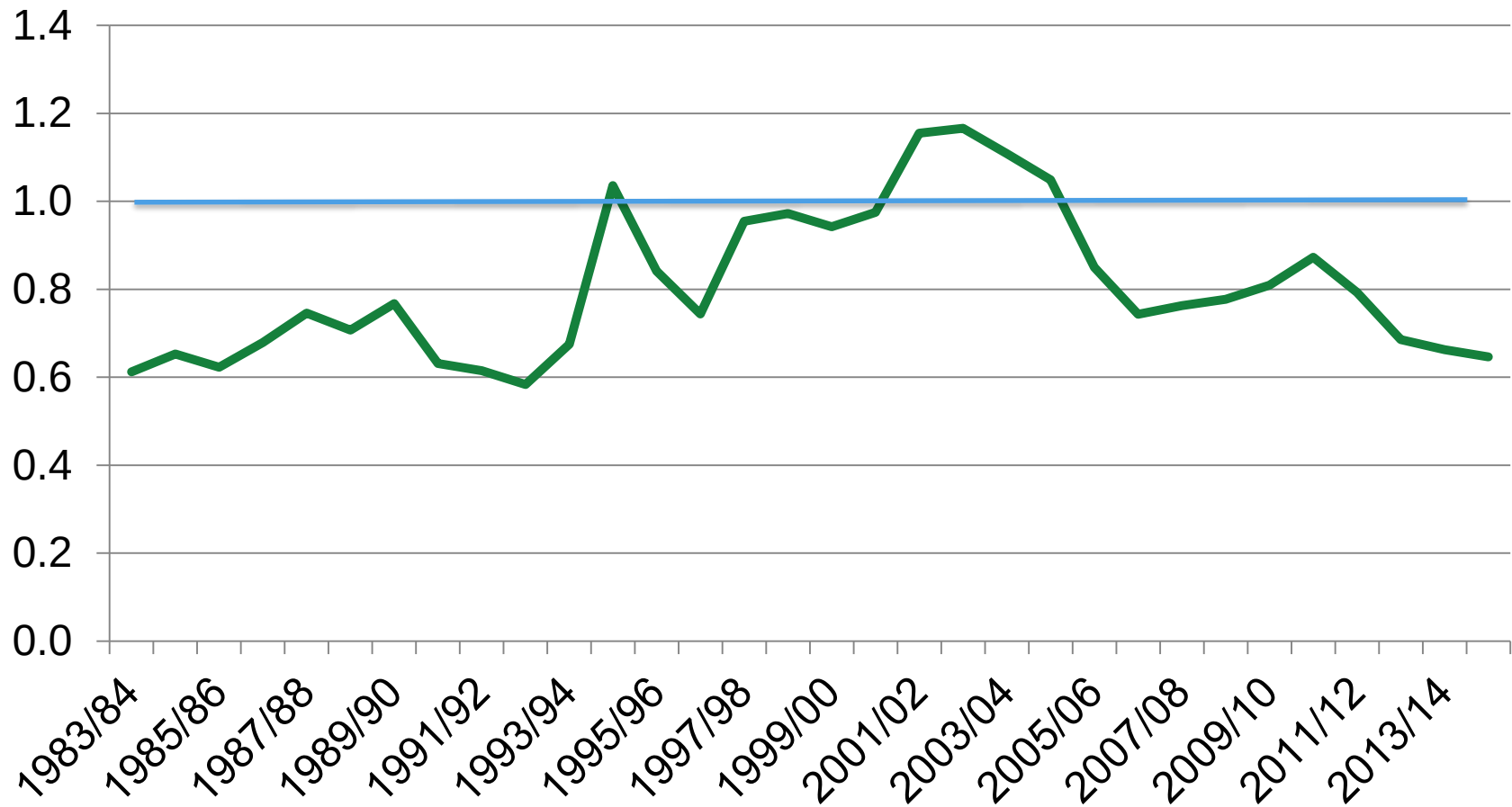
On average, 95% of rents collected as fiscal revenues from 1983-2014

Monitoring Spending: Sustainable Budget Index (SBI)

Sustainable Budget Index

- Ratio of non-investment (recurrent) spending to recurrent revenues
- If < 1 , budget is sustainable
 - Mineral revenues not being used to finance recurrent spending
 - Mineral revenues being used to finance investment (accumulation of assets)
- Implementation of the Hartwick Rule
- Largely observed in practice, despite being a policy rule not a statutory rule

Sustainable Budget Index



How have mineral revenues been spent?

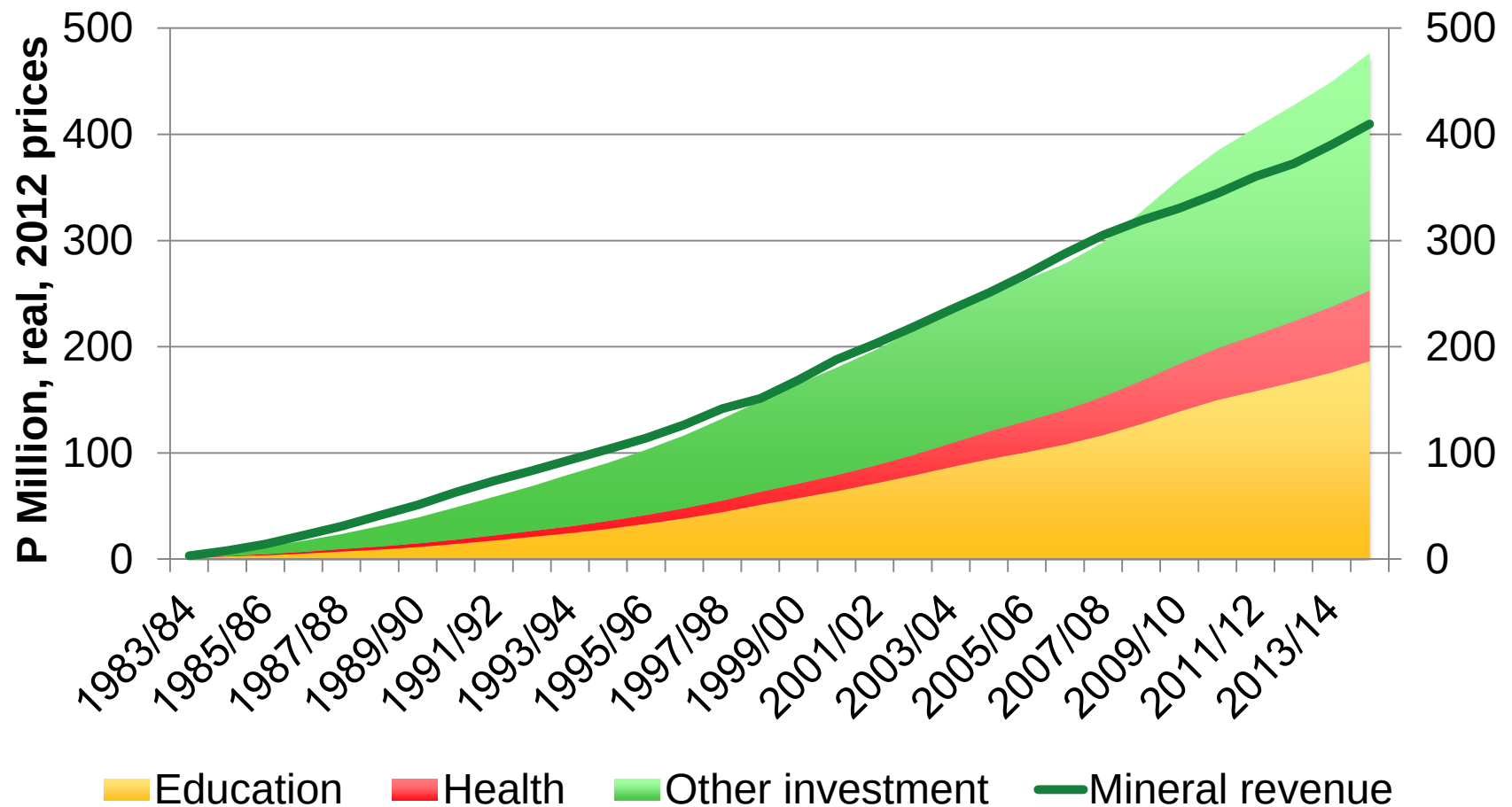


Illustration: Using Energy Accounts to support carbon taxation in South Africa

SA: major emitter of CO₂ (13th largest in world)

Government policy to reduce emissions, by imposing a carbon tax to penalise CO₂ emissions

Energy accounts enabled the govt to establish which sectors were major emitters of carbon, and which were the most carbon-intensive in their use of inputs

Provided inputs to macroeconomic modelling to determine the impact of a proposed carbon tax on different economic sectors, employment levels, exports etc.

Draft Carbon Tax Bill released for public comment in December 2017

Next Steps

We have covered the principles of calculating a range of adjusted macroeconomic indicators

We have focused on principles, calculations and data sources

Further work is needed to develop and refine domestic data sources for key indicators, to reduce reliance on external measures

Refinement of indicators – Comprehensive Wealth

Produced capital

Identify service lives that are appropriate for Indonesia

Prepare fixed capital data for different asset classes,
reflecting GFCF categories in the NA

Include IP as an asset class

Refinement of indicators – Comprehensive Wealth

Human Capital

Construct cost-based human capital series for Indonesia

Disaggregate public spending on education into consumption and capital spending

Extend series back in time – to 1970 if possible – by using historical data on public and private education spending

Incorporate spending by firms and households on education and training

Refine measures of key parameters

- Labour force participation rate
- Age-specific death rates
- Working life to retirement

Refinement of indicators – Comprehensive Wealth

Mineral Accounts

Refine calculation of mineral asset values

- **Choice of discount rates**
- **Moving averages of rents**

Investigate further the reasons for difference between domestic and WB figures for mineral asset values

Refinement of indicators – ANNI and ANS

ANNI/ANS

Use domestic sources of mineral and energy depletion data

Develop domestic data sources for pollution, CO₂,

Extend to include typhoon damage?

Extend to include impact of external pollution?

ANS

Include private expenditure on education (households, firms)

THANK YOU!



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