Submission via online

Email: Safeguard.SGM@industry.gov.au

23 September 2022

**Re: Safeguard Mechanism reforms**

Engineers Australia is the peak body for Australia's engineering profession with jurisdictional authority for engineering professional standards as Australia's signatory to the International Engineering Alliance (IEA). We have been operational for over 101 years and have over 114,000 members representing all engineering disciplines and operating in all of Australia's economic sectors.

We are also formally accredited as an observer to the business of the United Nations Framework Convention on Climate Change (UNFCCC), United Nations Environment Assembly (UNEA) and United Nations Environment Programme (UNEP).

Engineers Australia provides a forum for its members to discuss key climate change issues, providing information and analysis in the consideration of national and international climate change policy and the role the profession must play in Australia's transition to net zero emissions by at least 2050, and its responses to the impacts of Australia's increasingly changing climate.

In considering this submission, Engineers Australia asks the Department of Climate Change, Energy, the Environment and Water (DCCEEW) to note its very large and broad range of members. The submission aims to communicate a balance of views expressed by a cohort of individual members that have voluntarily engaged in our internal consultations on this matter; and while the process is open to all members, in practice it can only realistically capture a sample of informed engineering views.

Engineers Australia will make itself available at any time to discuss any of the issues raised in its submission with DCCEEW, and it feels it is well placed to provide informed feedback on the evolution of the Safeguard Mechanism (SGM).

## 1. Context

DCCEEW's discussion paper seeks detailed views on at least eight core design elements.[1] Engineers Australia as a professional body is not a liable entity under the scheme, and so it offers some high-level observations on the SGM's reform rather than addressing each of the many technical questions posed.

Engineers Australia does observe however that the timeframe allocated for consulting on these complex reforms is short; the submission process is 4 weeks, and current legislation will need amending and passing through Parliament prior to implementation which is scheduled for 1 July 2023.[2] These reforms may benefit from stakeholders being afforded more time to consider, deliberate and publicly debate the many complex issues as well as future SGM interactions with broader and future climate policy settings.

SGM reforms today may well determine, and will certainly influence, Australia's ability to achieve net zero emissions by 2050 at the latest, and at what cost to facilities, firms and the national economy. They will also impact on the efficiency of new announcements such as Energy Ministers recently agreeing to add an emissions objective into the National Energy Objectives and a National Electric Vehicle Strategy including fuel efficiency standards expected to be imminently released as well as future carbon trading arrangements.[3]

[1] Mitigation contribution; Setting baselines; Baseline issues; Trading issues; No disadvantage or discrimination; Innovation issues; Declining baselines; and Other design issues.

[2] Consultation period is from 18 August to 20 September 2022

[3] National Energy Transformation Partnership includes an emissions objective; adopted by Energy Ministers Meeting on 12 August 2022 (see communique)

## 2. Role of rational expectations

Engineers Australia would like to briefly reflect on the almost three decades of domestic climate policy since Australia's ratification of the Convention in 1994; and changes in international climate settings since the Paris Agreement.

It is normal for facilities, firms and governments to operate in environments of inherent uncertainty including on climate policy; but facilities and firms today operate with comparatively high levels of climate policy certainty when compared to 1994. Firstly, they know retrospectively that Australia legally committed to and met its legally binding emissions reduction targets under the Kyoto Protocol (2008-2020); and they also prospectively knew from 2016 onwards that Australia's emissions reduction commitments under the Paris Agreement would require more compelling emissions reduction obligations.

The Government has further reduced climate policy uncertainty by legislating its emissions reduction targets as well as agreeing to continue developing the SGM as its flagship mitigation policy.[4]

This means that from at least 1994 onwards, and certainly from 1998 when Australia signed the Kyoto Protocol, Australian emitters have consistently received strong policy signals for a need to hedge their future carbon risks and liabilities either through financial strategies and/or mitigation technology pathways. This was strongly reinforced in 2009 by the institutionalisation of a carbon price under the Carbon Pollution Reduction Scheme (CPRS); and while the CPRS was rescinded in 2014, the necessity for steep emissions reductions never waned.

It is yet to be seen whether facilities and firms consider the SGM imposes on them sufficient compulsion and/or affords them sufficient incentives to act now rather than wait until it becomes clearer what advantage might be bestowed in the longer-term, including possibly accessing international emissions trading schemes and/or leveraging beneficial interactions with other trading mechanisms such as the ERF or Renewable Energy Target (RET) among others.

Some policy implications of rational expectations should be that SGM reforms avoid provisions that reward or compensate emitters for poor past business decisions (moral hazard). They should also not disadvantage or discriminate against facilities that have already acted prudently by allocating weaker baselines relative to those facilities that have not; or relative to facilities afforded asymmetric opportunities to negotiate more favourable baseline arrangements with the Regulator. These latter arrangements may serve to only confuse the carbon pricing signals of a well-functioning SGM and undermine its efficiency and effectiveness to drive deep, rapid and cost-effective mitigation and/or undo the benefits of early abatement action.

Finally, over 90 per cent of the world's GDP, emissions and population are now covered by commitments to achieve net zero emissions and this has created a more level playing field in terms of carbon obligations faced by our trade competitors and arguably reduced any material need for assistance to prevent carbon leakage.

## 3. Engineering-led climate policy

Engineers Australia recognises the scale and urgency of the challenges presented by climate change, the disruptions it causes, and the pivotal role of engineering in enabling a socially just transition to a sustainable society.

Our engineering perspective is grounded in science and concerned with the management of risk. Limiting warming to 1.5°C, with an 83 per cent likelihood of success, is the best case described by the Intergovernmental Panel on Climate Change (IPCC).

Simple maths indicates this requires net zero emissions to be achieved by 2033 assuming a linear reduction in emissions. Such a low probability of success is unacceptable in any engineering code. The window for acting within engineering risk parameters has already closed. From a risk perspective, this means that when the projected consequence is unacceptable, what can be done should be done, unless proved that it is impracticable.

Immediate action at pace and scale must occur to minimise climate disruption. This includes rapid reductions in emissions and adaptation to improve the resilience of communities, the environment and infrastructure.

The implementation of effective, efficient, predictable, and enduring policy is a prerequisite to facilitate the appropriate investments needed to transition Australia to a net-zero emissions future. Having ratified the Paris Agreement, the Australian Government is obligated to not only align its ambitions (mitigation, climate finance and adaptation) in a manner consistent with the global climate goals but to implement domestic policy settings that can

[4] Legislation passed both Houses on 8 September 2022 with assent on 13 September 2022

ensure Australia mobilises and services the engineering needs (innovation, skills, education, standards) of the climate mitigation task at pace and scale.

**4. Guiding reform principles**

The SGM's new objective needs to go far beyond the old objective that simply sought to preserve business-as-usual (BAU) emissions reductions. A new objective will have at least three interacting implications:

1. Ambitious targets necessarily require significant changes to the nature of Australia's economic growth and structural adjustments; if the SGM is not designed appropriately or sufficiently there is a possibility that these targets may be missed
2. Facilitating abatement under the scheme will create $CO_2$-e pricing uncertainty for participants (and non-participants), including the possibility that the SGM's carbon price discovery does not represent well the magnitude and pace of abatement required; noting the ERF provides but one indication of the potential opportunity costs of abatement
3. The incidence of abatement costs across the economy will necessarily be redistributed; the SGM and alternate complementary measures should aim to ensure an equitable proportion of the emissions reduction task is shared within and external to the scheme.

Engineers Australia understands that the best knowledge on individual abatement costs rests with individual facilities which in turn often resides with engineering professionals, while the legal responsibility of meeting Australia's international emissions reduction targets remains the Government's.

A key challenge of this is that what the Government considers an optimal outcome under the SGM may not necessarily be supported by the aggregation of optimal decisions made by individual facilities under the scheme. The SGM's reforms will need to balance the mitigation trade-offs made at the facility level and in the private interest (maximising profit, minimising costs) with the socio-economic trade-offs being sought by the Government and in the public interest (industry assistance, subsidies/taxes, distribution of policy cost burdens/opportunities, a just workforce transition etc).

With this in mind, Engineers Australia supports the Government purposefully reforming the SGM within a context of:

1. A nationally harmonised and coordinated climate strategy that will enable Australia to achieve compliance with its international commitments as well as its (expected to be) legislated emissions reduction targets
2. Enabling stable and enduring mitigation outcomes at least-cost and least-disruption to the national economy while maintaining international competitiveness
3. Equitably distributing cost burdens and sharing of benefits associated with a carbon neutral future that is in the national interest
4. Ensuring compatibility with future international emissions trading rules under the United Nations Convention on Climate Change (UNFCCC; Article 6) so that future trades might occur across and within national boundaries
5. Facilitating the necessary economic adjustments to achieve Australia's climate goals, while recognising the dynamic nature of economic change and investment opportunities
6. Further aims to minimise compliance costs (administrative, transaction, adjustment) through avoiding additional prescriptive regulations while allowing for maximum flexibility by legally liable entities to invest in commercially attractive solutions; and leveraging existing reporting obligations under the National Greenhouse and Energy Reporting scheme (NGERs) and the Australian National Registry of Emissions Units (ANREU)).

**5. First order design considerations**

**Appendix 1** highlights the scheme's inherent design complexity; with the following considered to be the highest priority reform considerations:

5.1. Maximise the schemes abatement contribution in meeting Australia's total emissions reduction targets

5.2. Dependably, equitably and substantively reduce absolute levels of allowable emissions (baselines) over time for all facilities

5.3. Assess what might be otherwise considered an optimal scheme coverage (gases, activities, emitters, international linkages)

5.4. Allow for the trading of abatement surplus (or supplemental) to compliance requirements.

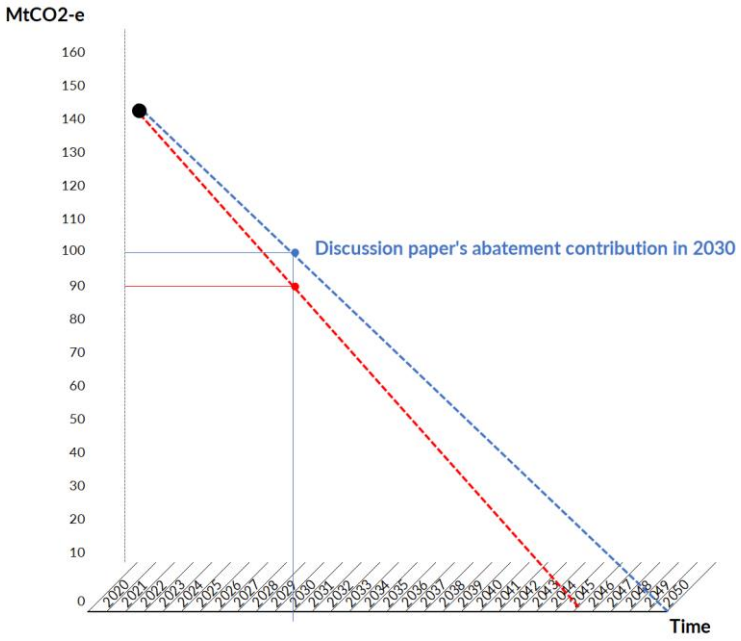
These are briefly explored sequentially below.

*5.1. National mitigation potential*

The SGM is Australia's main policy lever for driving national emissions reductions; only about 20 to 30 per cent of Australia's emissions are currently generated outside of the scheme.[5] Further analysis of SGM data indicates that its 2020-21 aggregate allowable emissions baselines for scope 1 emissions is about 29 per cent of Australia's annual total (scope 1 and 2) emissions; this roughly equates to 45 per cent of national scope 1 emissions.[6]

The maths suggests that if headroom emissions (49Mt$CO_2$-e) are removed from the system, then regardless of whether the current share of 29 per cent of the expected scope 1 and 2 (354Mt$CO_2$-e) emissions in 2030 or 45 per cent of the expected scope 1 (225Mt$CO_2$-e) emissions in 2030 are maintained, both provide for about 100Mt$CO_2$-e of aggregate allowable emissions under the scheme in 2030; which is the same as DCCEEW's calculation.[7]

A core question remains whether the SGM's current contribution to the national abatement task should be maintained or lifted going forward. DCCEEW's implied maintenance of the current contribution appears somewhat arbitrary. If the SGM's abatement contribution was made even moderately more ambitious (as illustrated below) then Australia's emissions reduction trajectory would logically achieve net zero emissions quite a few years earlier than 2050.




*Source: MBonner, Engineers Australia*

Engineers Australia acknowledges the Government's public commitment to "reducing baselines … gradually over time" which renders more ambitious scenarios challenging; but this should not be reason to abandon any ideal of embracing more ambitious mitigation pathways and achieving earlier target dates for net zero emissions if practicable to do so.[8] This is an important consideration in that it is the cumulative concentration of atmospheric emissions that matters most; and by accelerating the achievement of net zero emissions by even a few years could help flatten the marginal damage function (make less damaging) compared to what it might otherwise be if emissions are released closer to the target date of 2050 and when atmospheric concentrations are at their highest.

[5] SGM scope 1 emissions (141Mt$CO_2$-e) plus grid-connected power sectoral baseline (198Mt$CO_2$-e) derives a share of national emissions (scope 1 and 2) of between 70 per cent without headroom emissions and 80 per cent with headroom emissions.

[6] SGM tables 2016-17 to 2020-21; 2020-21 data: baselines plus multi-year period = 141Mt$CO_2$-e (SGM scope 1) + 49Mt$CO_2$-e (SGM headroom) / 489Mt$CO_2$-e (Australia scope 1 + 2) = 39 per cent); AEGIS 2020: SGM 141Mt$CO_2$-e (SGM scope 1) + 49Mt$CO_2$-e (SGM headroom) / 314Mt$CO_2$-e (Australia scope 1 only) = 60 per cent); National Greenhouse Gas Inventory (NGGI) March 2022

[7] 354Mt$CO_2$-e equals a 43 per cent reduction on 2005 levels; and internal analysis used to establish expected scope 1 emissions in 2030 (using AEGIS data split of scope 1 and 2 of 202-21 national emissions

[8] Powering Australia, page 5

*5.2. Declining baselines*

Baselines remain central to the design of the SGM. When the SGM commenced, baselines were designed to allow facilities to continue emitting at BAU levels of emissions. This is clearly no longer a fit for purpose outcome especially in the context of Australia's newly legislated carbon constraints.

The risk inherent in baselines is that the level of allowable emissions is set ex ante (prior to actual emissions and abatement) while emissions performance is assessed and potentially rewarded with credits ex post (retrospectively). This signals a strong need for conservatism in setting baselines to avoid:

→ Allocating facilities too generous a baseline that in aggregate exceed the scheme's finite carbon budget/s

→ Over-rewarding (credits) and/or allowing a degree of systemic non-compliance (headroom emissions) in abatement outcomes

→ Undermining the confidence in and integrity (and value) of tradable credits generated.

There have been many different baseline methodologies since 2016. While the impacts of lapsed baseline approaches continue to wash through the scheme, an issue of concern to Engineers Australia is the static treatment of the sectoral baseline for grid connected power which was set in 2016 at a level way above the sectors then emissions (198Mt$CO_2$-e per annum) and for which the Government has indicated will remain valid until breached.

The grid-connected power baseline has not been exceeded during the life of the SGM; the Clean Energy Regulator publishes the associated emissions under the SGM, and in 2020-21 they were 150Mt$CO_2$-e.[9] This means the current baseline over-allocates emissions by about 48Mt$CO_2$-e per year and so provides no additional motivation to reduce power sector emissions.[10]

There exists many complementary measures and funds outside of the SGM that serve to incentivise the decarbonisation of the grid-connected power sector such as RET, CEFC, ARENA, Rewiring the Nation Plan, National Energy Transformation Partnership; but the sector's mitigation task ought be harmonised in the SGM to (at best) avoid confusing or (at worst) undermining the efficiency of SGM carbon pricing.

It is clear that since 2021 the Government's preferred methodology is Production Adjusted Baselines (PABs). They are calculated by multiplying the aggregate output (standard volume, mass or energy unit) of 'production variable/s' (PVs) with an emissions intensity (EI). EIs are either default (set by the Government representing industry average EI of production over 5 years) or site specific (set by business).

In essence this means that the current PAB approach provides for allowable emissions to expand in proportion to increases in either output (facilities investing in or divesting of productive capacity) or in EI. This approach is clearly inconsistent with achieving an annual budget of allowable emissions (target).

By fixing the baseline to an absolute level of allowable emissions means that facilities must either reduce output or EIs (or both) to stay within allowable emissions over time. An increase in one variable necessarily requires a corresponding and proportional decrease in the other in order to stay within allowable and annually declining baselines.

This approach necessarily increases the emissions productivity of facilities however may also constrain output and consequently economic growth. The impact of this at the macro level needs sensitive consideration to avoid either unintended or perverse emissions and economic outcomes, though this should not take precedence over other policy outcomes e.g. international agreements to phase down unmitigated thermal energy production.

Further justification for a fixed baseline approach is that non-fixed PABs may have foreseeable economic costs associated with them; by arguably shielding or even incentivising unmitigated emission intensive facilities to continue operating over the longer-term could inevitably force them to pass on higher abatement costs over time as well as redistribute higher abatement burdens on other sectors.

*5.3. Optimal coverage*

The Government has already indicated that it is not considering any changes to the scheme's coverage (i.e. gases, activities, emitters, locations – international). If this element was included in the consultation scope, and Engineers Australia suggests it would be a sensible thing to at least contemplate from design and efficiency perspectives, then it

[9] https://www.cleanenergyregulator.gov.au/NGER/National%20greenhouse%20and%20energy%20reporting%20data/electricity-sector-emissions-and-generation-data/electricity-sector-emissions-and-generation-data-2020-21

[10] Australia's 2020-21 emissions (498Mt$CO_2$-e) multiplied by 33 per cent (160Mt$CO_2$-e); current SGM grid-power baseline (198Mt$CO_2$-e)

might be best countenanced on the extent to which the total cost per tonne of abatement needed to deliver Australia's national emissions targets can be minimised.

For facilities hovering around the 100kt$CO_2$-e threshold, once captured in the SGM, consideration could be given to them maintaining an enduring obligation to reduce their emissions by a set declining rate year on year. This might help prevent the avoidance of emissions reductions from facilities that drop out of the scheme due to emitting under the 100kt$CO_2$-e threshold.

Recognising that the Government itself may not know what an optimal coverage of the scheme might be in order to maximise the SGM's mitigation contribution to the national abatement task, it is reasonable to assume that there is an inflexion point where costs per tonne of emissions start to grow at the margin as coverage expands to include progressively smaller emitters (i.e., monitoring and verification). This might be one indication of optimal coverage.

Some compliance costs should remain at least stable and perhaps fall as coverage expands including:

- → Marginal costs of abatement as greater access to lower cost abatement options become available
- → Administrative costs (noting that reporting protocols already exist under NGERs), brokerage costs (deeper trading markets and more competitive brokerage services)
- → Overall economic inefficiency due to enhanced competition in the abatement solutions market, deepening volumes and choice of tradable instruments, more consistent treatment of comparable activities and emissions sources.

There are clearly design irregularities between the mandated liability thresholds and legal personality of 'responsible emitters' under the SGM and NGERs; the facility liability threshold under NGERs is triggered at >25kt$CO_2$-e per annum and 50kt$CO_2$-e for corporate entities; and applies to controlling corporate entities (similar to the CPRS) while the SGM threshold triggers at >100kt$CO_2$-e per annum and falls to facility owners.

If the SGM adopted NGERs thresholds the number of responsible entities could more than double and administrative complexity reduce when considering who might be best placed to make effective mitigation decisions in joint ventures where there may be multiple and possibly competing commercial interests.

It is also clear that facilities in sectors that remain outside of the scheme must be equivalently compelled and/or incentivised to bear a proportional share of mitigation task and/or cost to those inside the scheme.

Engineers Australia recommends the Government assesses the costs and benefits of expanding the SGM (emissions, liable entities, activities) relative to what might otherwise be considered an optimal mitigation pathway for it; as well as the suite of alternate complementary and equivalent requirements for emissions generated outside of the scheme.

*5.4. Crediting below baselines*

It is foreseeable that the provisioning of crediting arrangements for emissions outcomes below baselines will be more difficult to operate, govern and reliably deliver on emissions reduction targets when compared to (say) a cap and trade framework. The design complexity of baseline-credit frameworks however is expected to remain central to the SGM, but it will continue to impact on:

1. Liable entities (data requirements for baseline determination, abatement justification, monitoring, reporting, verification and compliance)
2. Government administration (formulating and regulating new baseline methodologies, reforming inefficiencies such as emissions baseline headroom, avoiding overreach and ensuring fit for purpose)
3. Regulatory oversight and compliance (co-existence with other mandated schemes such as the RET and NGERS, and schemes such as the ERF as well as state and territory schemes).

Engineers Australia encourages the Government to recall and reflect on the legacy of public knowledge gleaned from the design and operation of the CPRS in 2009. This could include information revealed on sectoral, facility, firm and/or project level abatement profiles and the existence of low cost abatement opportunities and cost structures; as well as public investments in analysis and information on what constitutes best practice EI as well as types, levels, effectiveness and efficiency of different assistance approaches to industries.

The ability for entities to generate and trade Safeguard Mechanism Credits (SMCs) in recognition of abatement outcomes considered surplus to their compliance requirements may assist the compliance of other facilities facing delays in accessing their own commercially attractive abatement technologies and solutions. Allowing for this will also provide 'learning by doing' in most aspects of any future shape and form of an economy-wide trading scheme.

Engineers Australia prefers the generation and trading of SMCs as a compliance option over say the use of other offsets to manage excess emissions beyond allowable baselines; this includes Australian Carbon Credit Units (ACCUs)

which are generated outside of the scheme as they simply provide for additional emissions to be generated and offset within the scheme. SMCs on the other hand must be generated and acquitted within the scheme meaning that abatement is more likely occurring at point sources of emissions.

And while purchased ACCUs might provide a compliance and price safety net under the SGM, they cannot be considered additional to the SGM's BAU emissions reduction obligations and so cannot be allowed to be generated by facilities in the scheme; their creation must be kept external (additional) to the scheme.

Engineers Australia also considers there are pros and cons of banking and borrowing of SMCs. Banking refers to the possibility of facilities saving SMCs for use in future compliance periods, while borrowing refers to claiming allowable emissions from future baseline allocations for compliance use in the current period. While both serve to provide for intertemporal flexibility and indeed have been legitimately included in the EU ETS since 2005 (Directive 2003/87/EC), it may be argued that borrowing unnecessarily exposes the scheme to higher risks of facilities shirking their future compliance obligations and so introduces a degree of moral hazard in decision making. This could result in higher emissions that then impose on Australia an unsustainable emissions reduction trajectory within stipulated timeframes.

Access to SMCs and ACCUs may also help reduce the need for administrative interventions to assist the low technology readiness of some facilities on the basis of hypothetical expectations of nascent technologies relevant to their needs by continuing multi-year compliance periods.

The extent of commercial readiness of technologies is important, but so too is the extent to which technologies have and are being publicly funded under the Government's Low Emissions Technology Statements and other measures outside of the SGM.

There is no public balance sheet large enough to support the billions of dollars required to develop and commercialise all relevant mitigation technologies. Enabling the private sector to foster and invest in those technologies most relevant to their own future welfare is arguably best managed through complementary measures outside of the SGM's deployment focus, and that aim to support Australia's national engineering innovation systems.

There is also some justification on an innovation basis for considering expanding the SGM to include smaller and medium sized companies, perhaps on a voluntary opt-in basis at least. The OECD observes that "… the bulk of innovations are introduced by new entrants or start-ups …" while a recent Senate Standing Committee found "… young SMEs (facilities and firms aged 0–5 years) made the highest contribution to start-up activities"; finally the Office of the Chief Economist finds that "R&D high-growth firms are dominated by SMEs".[11]

The inclusion of large emitters provides for practical coverage of Australia's scope 1 emissions; it does not guarantee access to low cost innovation to help minimise the overall economic cost of the scheme to facilities, firms and the national economy. Including smaller facilities may provide a greater potential to mitigate emissions through agile and innovative energy efficiency improvements and lower cost innovations, which in turn could attract SMCs for sale to larger emitters for compliance purposes and generate revenues for SME's and spur job creation.

## 6. Second order considerations

The Government has already indicated that it will not be considering any scheme expansion and intends to retain the original scope 1 emissions liability threshold of >100,000t$CO_2$-e per year, the current treatment of grid connected power with its aggregate sectoral baseline of 198Mt$CO_2$-e, or how to manage scope 2 or scope 3 emissions from non-grid connected power facilities.

It remains unclear to Engineers Australia the extent to which such exclusions may serve to constrain the scheme's efficiency and effectiveness; especially if the 20 to 30 per cent of national emissions that sit outside of the scheme do not face similar levels of compulsion and/or incentive to reduce their emissions at least cost to the economy.

Consequently, it is recommended that the Government provide this clarity by preparing and publishing a National Emissions Reduction Strategy showing how emissions reductions will be achieved and coordinated. This should include carbon budgets and trajectories for each portion of the economy (and hence their emissions) governed by each mechanism. Note that this contrasts with the existing Emissions Reduction Plan which does not provide a clear pathway for emissions reduction but instead speculates that the future development of affordable near zero technologies will be sufficiently successful to achieve the emissions reduction outcome on its own.

It is also not clear how efficient or supportive the interactions will be between a reformed SGM and the current funding opportunities through Powering Australia, Regional Infrastructure Fund, National Reconstruction Fund, CEFC,

[11] OECD *Enhancing the competitiveness of SMEs in the Global Economy* report (page 8); The Senate Economics References Committee on Australia's Innovation System (December 2015, page 12) and The Office of Chief Economist (Department of Industry, Innovation and Science, 2017) *Australian Innovation System Report (page 70)*

ARENA as well as recent program reviews (Independent Review of ACCUs, Corporate Emissions Reduction Transparency report) and policy announcements as previously mentioned.

These should all be highly complementary to each other, as measured by the economic efficiency of achieving their separate objectives in co-existence; and if found to be inefficient, then they should either be redesigned and/or cease in preference of the most efficient measure/s.

## 7. Concluding observations

Engineers Australia's preference for an enduring national climate policy response is a market mechanism that factors in at arm's length to the Government the external costs of greenhouse gas emissions into product design, use, maintenance and project feasibility assessments and investments in order to facilitate the engineering and economic structural changes required to achieve Australia's net zero emissions goal and enhanced circularity of resource use. The revenues generated from scheme through taxes (income, GST, company) and fees should be fully recycled back to households and the general economy to further assist climate actions, and this includes revenues associated with the SGM and any trading of SMCs.

The SGM with its expected future reforms is expected to only ever get part way to achieving this.

Engineers Australia holds high expectations that the Government in announcing its intention to reform the SGM is flagging its propensity to further consider how the SGM might harmoniously, virtuously and ultimately evolve into a more efficient and equitable economy wide carbon pricing scheme.

Practical solutions and innovative engineering are essential to transform systems, technologies and infrastructure. Engineers must be at the forefront in decision-making affecting the scoping, planning, design, delivery and operation of systems for climate change mitigation and adaptation.

In regard to pragmatic mitigation action, Engineers Australia through its recent Climate Change Position Statement (Statement) advocates for:

- → Principles of near zero emissions, climate resilience, and a circular economy in all policy, regulations, standards and technical specifications applicable to engineering
- → A standardised means of calculating the emissions footprint of engineering works, operations, products and services across the entire project and product lifecycle
- → A mechanism to factor external costs including greenhouse gas emissions into product design, use, maintenance and project feasibility assessments as well as decommissioning, abandonment and/or re-purposing
- → A means of assessing the exposure of new and existing engineered systems to climate disruptions to inform and motivate mitigation and adaptation responses
- → A means of monitoring and measuring progress to inform learning and improvement actions needed for climate change mitigation and adaptation
- → Improved education and training of members of the engineering team and the wider community on climate change, resilience and sustainability.

The proposed SGM reforms are unlikely to undermine any of these preferred positions, and indeed Engineers Australia anticipates they will directly and/or indirectly support them.

But Engineers Australia respectfully questions whether simply reforming the SGM will position Australia well to achieve the abatement task ahead, and whether it is sufficient to catalyse the medium-term economic structural reforms required to deliver permanent decarbonisation from 2050 onwards (if not earlier); as well as potentially climate positive outcomes (negative net emissions) and a more circular economy.

Skills is not an issue identified in the discussion paper, but it is clear that the SGM offers very little direct assistance to enhance the competency and availability of a highly skilled workforce, notably engineers, in the delivery of Australia's net zero emissions future. This is and will remain a critical enabling element of Australia's capacity to decarbonise in a timely manner. Public support is needed for the training and development of Australia's workforce (including skilled immigrants) so that the engineering requirements of decarbonised infrastructure, systems and technologies can be met.

If not sufficiently supported in parallel with the required changes to production and consumption behaviours to reduce emissions, then Australia will continue to struggle to mobilise sufficiently skilled labour in the face of global skills shortages and fierce global competition to attract those skills. This is as important an environmental issue as it is an economic issue in Australia's national and international interests.

Engineers Australia stands ready as the peak representative of Australia's engineering profession to work with all levels of government, investors, the private sector and the wider community to work to accelerate engineering

innovation for a swift transition to a sustainable economy. It urges the Government to fully consider all sensible reforms to the SGM, in a context of national climate policy and regulatory settings and in a manner that may more closely align the scheme to an efficient and future economy-wide mitigation measure.

Please don't hesitate to get in touch with Mark Bonner (mbonner@engineersaustralia.org.au) to discuss these matters further.

Yours sincerely,

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Engineers Australia

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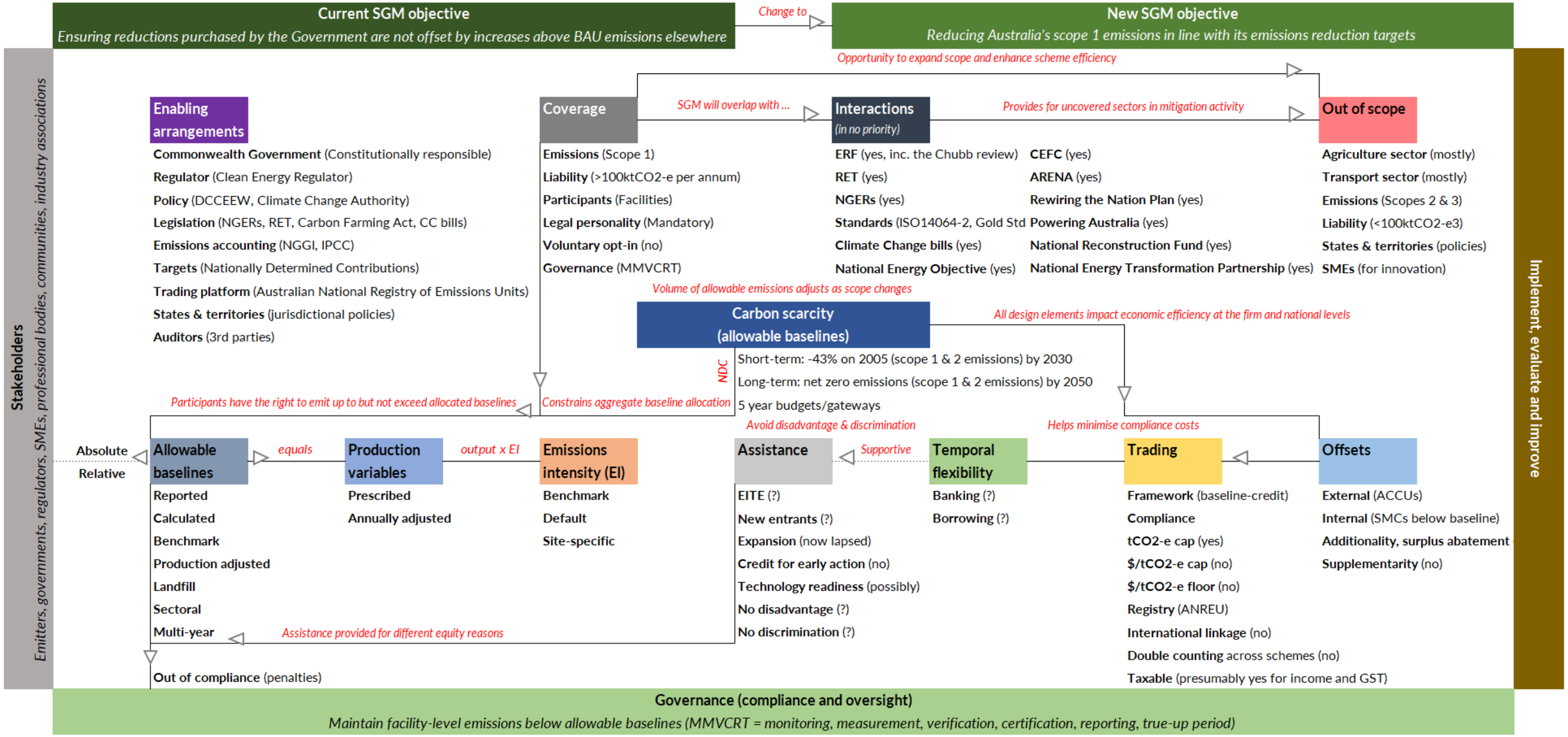
**Appendix 1 SGM key design elements**




*Source: MBonner, Engineers Australia*