Global Green Growth Institute

Impact Pathway Review: Mongolia Program

MAIN REPORT

Impact & Evaluation Unit

December 2019

Acronyms

ADB	Asian Development Bank
CPF	Country Planning Frameworks
CRM	Customer Relationship Management
DE	Designated entity
EE	Energy efficient / efficiency
ERC	Energy Regulatory Commission
ERP	Enterprise resource planning
ESCO	Energy service companies
ESL	Energy standards and labeling
GCF	Green Climate Fund
GG	Green growth
GHG	Greenhouse gas
GIZ	German Technical Cooperation Agency
GoM	Government of Mongolia
GTCK	Green Technology Center Korea
HCA	Host Country Agreement
IEU	Impact & Evaluation Unit
IPR	Impact Pathway Review
IPSD	Investment and Policy Solutions Division
L&D	Learning and Development
MCUD	Ministry of Construction and Urban Development
MET	Ministry of Environment and Tourism
MGFC	Mongolia Green Finance Corporation
MNT	Mongolian Tughrik
MRV	Monitoring, Reporting and Verification
MSFA	Mongolian Sustainable Finance Association
NAMA	Nationally Appropriate Mitigation Action
NDC	Nationally Determined Contributions
NEEAP	National Energy Efficiency Action Plan
NGDP	National Green Development Policy
OED	Operations Enabling Division
PCM	Project Cycle Management
PPP	Public-private partnership
RE	Renewable energy
SDC	Swiss Agency for Development and Cooperation
SO	Strategic Outcomes
SPC	Strategy, Partnership and Communications
UB	Ulaanbaatar
UNFCCC	United Nations Framework Convention on Climate Change
WPB	Work Program and Budget

1. INTRODUCTION

1.1 About Impact Pathway Reviews

Impact Pathway Reviews (IPRs) are the new term for country program evaluations undertaken by the Impact & Evaluation Unit (IEU). The new term reflects efforts by IEU to revamp the previous approach to country program evaluations, in order to:

- realign evaluations to better support GGGI's priority of delivering on its Strategic Outcomes;
- reduce the time and resources required to complete evaluations, making them more effective in supporting rapid learning and improvement in country programs, in line with the philosophy of GGGI's *iGROW* reforms;
- make communication of evaluation findings easier to digest and more meaningful for audiences.

In Q1 of 2019, 3 country programs were selected to undergo an IPR in 2019: Mongolia, Vietnam and Uganda. Mongolia is the first country program to undergo an IPR.

1.2 Mongolia IPR methodology and scope

The IPR for the Mongolia was carried out between April and October 2019 by IEU staff, including an in-country mission during 2-6 September 2019. The approach broadly followed the approach set out in the IPR Guidelines, and involved:

- a review of program documentation (Annex 2)
- interviews with internal and external stakeholders (Annex 3)
- a half-day workshop with GGGI Mongolia team to discuss the IPR findings and recommendations.

The scope of IPR covered 14 core and earmarked-funded projects between 2015-2019 in the areas of energy, green cities and green financing, which shared common impact pathways (Annex 1).

One project in the water area[1] was excluded because (a) it occupied a different impact pathway from everything else and (b) beyond this project, nothing had been done in water area since to progress toward impacts. For these reasons, doing a separate IPR analysis on water-related work was not seen as worthwhile.

1.3 Getting a clear picture of country programs – Impact Pathway diagrams

In order to evaluate the progress of the Mongolia Program towards impact, it was necessary to first gain a clear picture of what the country program looked like.

As noted above, between 2015-19 the Mongolia Program was made up of 14 projects. Each project comes with an accompanying set of documents – logframes, results reports and output documents. In total, key pieces of the picture were spread across +60 documents, stored mostly in personal drives. There is currently no requirement or method in GGGI's system to bring these various fragments together into a single country program-level theory of change/logframe or results report for internal or external audiences.[2]

[1] *Mongolia Water Nexus* project, part of a multi-country program with earmarked funding from SDC (2101MN).

[2] The country program review sessions conducted at GGGI Annual Meetings in recent years comes closest to doing this.

To overcome this, IEU experimented with a new technique for generating such a picture for the Mongolia Program, without unduly altering or misrepresenting the content of the underlying project logframes and results reports. The resulting product was the impact pathway diagram shown in **Figure 1** below.

1.4 How to read and interpret the impact pathway diagram

Value chain: All program activities have been mapped against various stages of GGGI's value chain (or a simplified version thereof). The value chain stages are indicated at the top of the diagram in **brown** text.

Themes: All country program activities can be grouped into 4 themes[3], as shown by the colored boxes. The themes are:

- Multi-sector policies/plans (**blue**)
- Energy efficiency (**orange**)
- Renewable energy / Air quality (**red**)
- Green cities (**green**)

Outcomes: Within these thematic groups, key program outcomes are shown in **purple** text. The current status of each outcome is summarized with various icons:

- ✓ = outcome achieved
- ⌛ = outcome in progress
- ✗ = outcome not achieved
- ? = unable to assess outcome

Causal pathways: The **red** lines in the diagram indicate the presence of a causal pathway, where work in one area contributes in some way to work in another area. The existence of these pathways has been determined through reviews of project documents and stakeholder interviews carried out by IEU.

Impacts: The diagram includes figures for selected impacts[4] that may potentially arise from some of the policy and project development work undertaken by GGGI. To keep the diagram readable, only selected potential impacts - GHG reductions - were included. However, a full summary of all the potential impacts that GGGI is currently estimated to achieve in Mongolia is contained in **Figure 2**.

1.5 Going deeper into the details of program activities and results

To keep the diagram and this report succinct, detailed descriptions of the activities and results of the Mongolia program are contained separately in Annex 4. An interactive Prezi-based presentation has also been prepared as a supplement to this report, which allows readers to 'zoom in' to any part of Mongolia's impact pathway to access further details. The Annexes and Prezi presentation have been published together with this report on GGGI's internal *Impact* sharepoint site.

[3] 'Theme' is defined here in the general meaning of the word, not the 4 thematic areas of GGGI.

[4] The term 'impacts' here includes GGGI's 6 strategic outcomes as well as other types of significant results.

FIGURE 1: Impact pathway diagram for GGGI's Mongolia program

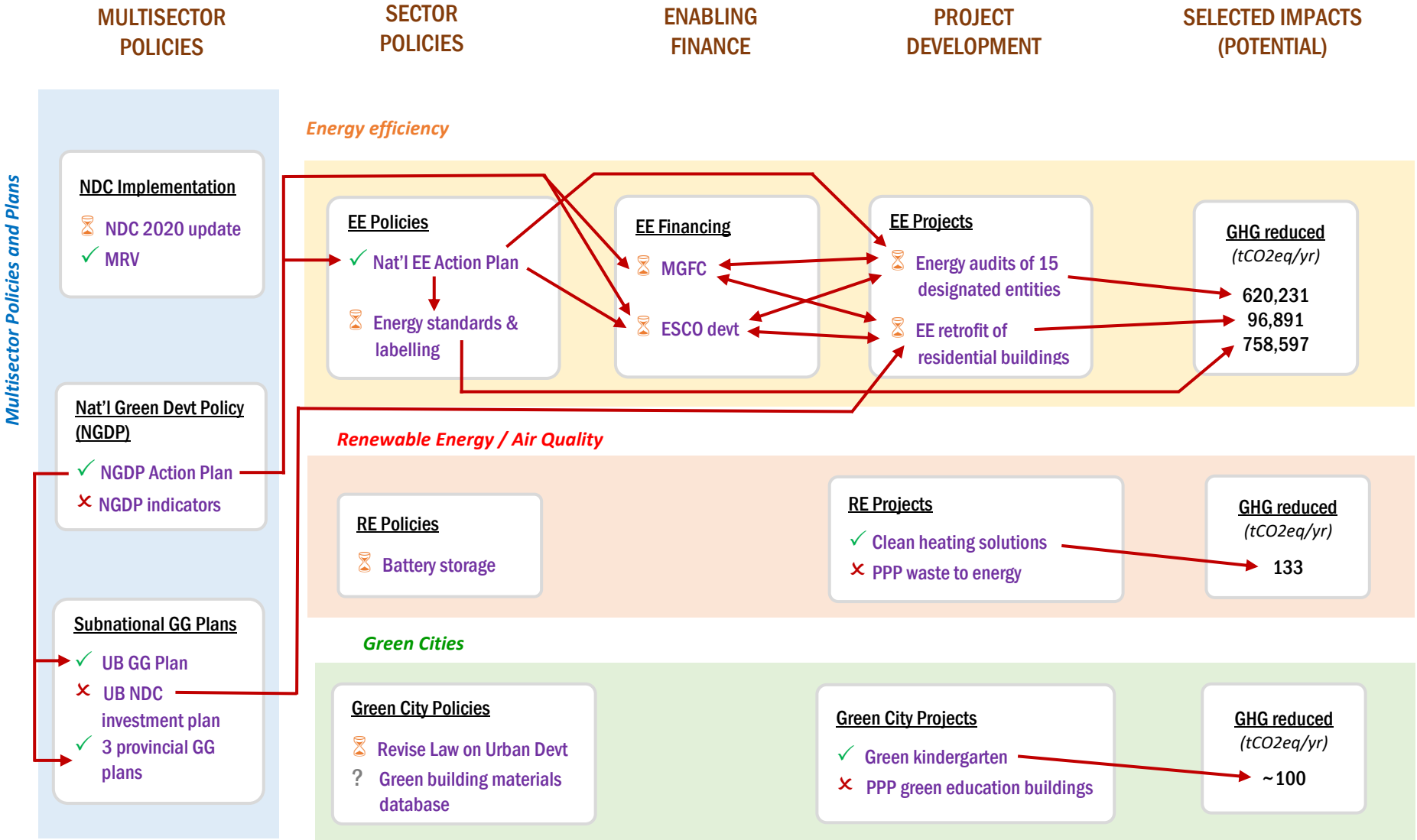

FIGURE 2: All potential impacts of the Mongolia country program

	Program area contributing to impact	Source of impact data	*Investor Commitment mobilized*	POTENTIAL IMPACTS					
				Monetary savings	*Reduced energy consumption*	*SO1: GHG reduced*	*SO2: Green jobs created*	*SO4: Improved air quality*	*Other impacts*
1	**ENERGY EFFICIENCY:** Energy audits of 15 designated entities (DEs)	Development of pilot energy efficiency projects in Mongolia – Final overall energy audit findings (Annex 2, Document #54, p.16)	**GIZ:** One of the DEs, Chingis Hotel, secured USD 10k from GIZ to install 2 variable frequency drives to air handling units, resulting in a 20% increase in energy efficiency	MNT 50,819m/yr, equal to around 19m USD/yr at time of writing (p.16)	**Electricity:** 259,770,378 kWh/yr (p.16) **Thermal:** 701,295 GCal/yr (p.16) **Coal:** 78,033 tonnes/yr (p.16)	620,231 tCO_2eq/yr (p.16)			
2	**ENERGY EFFICIENCY:** Energy efficiency retrofits of 375 residential buildings	NAMA Facility Project Outline 6th Call – Energy performance contracting for residential retrofitting in Ulaanbaatar (Annex 2, Document 53, specific page references are indicated for each impact)	**NAMA Facility:** EUR 18m (around USD 19.8m) being sought to retrofit 375 buildings (currently preparing detailed proposal to secure investor commitment) **GoM:** Based on earlier technical work, GoM committed USD 4.8m (MNT 12.8b) to an initial retrofit of 24 buildings		**Electricity:** 1,351 MWh/yr (p.5)	96,891 tCO_2eq/yr (p.5, 24)	1,068 new jobs created (p.19)		68,000 residents (14,766 households) benefit from more energy efficient housing (p.9)

	Program area contributing to impact	Source of impact data	*Investor Commitment mobilized*	POTENTIAL IMPACTS					
				Monetary savings	*Reduced energy consumption*	*SO1: GHG reduced*	*SO2: Green jobs created*	*SO4: Improved air quality*	*Other impacts*
			(separate from 375 buildings proposed to NAMA Facility)						
3	**ENERGY EFFICIENCY:** Mongolia Green Finance Corporation	GCF Funding Proposal – Mongolia Green Finance Corporation (Annex 2, Document #46, specific page references are indicated for each impact)	**GoM:** USD 5m equity, USD 13m loans (committed) (p.28) **MSFA:** USD 5m equity (committed) (p.28) **GCF:** USD 5m equity, USD 20m loans, USD 2m grants (not yet committed) (p.28)		**Coal:** 657,706 tons over 15 years saved from green affordable houses and thermal insulation of existing houses (p.31)	3,386,335 tCO_2eq over 15 yrs (p.1, 50)	2,000 jobs created (40% for women) (p.3, 41)	PM10 in Ulaanbaatar reduced by 24 tons in first year and 769 tons over 15 yrs (p.31) PM2.5 in Ulaanbaatar reduced by 17 tons in first year and 535 tons over 15 yrs (p.31)	104,602 people (50% women) directly benefit from access affordable green financial products (p.3)
4	**ENERGY EFFICIENCY:** Energy Standards and Labelling program	Market scoping, program design and impact assessment for a Mongolian S&L program (Annex 2, Document #29, p.61, table 5.21)			Electricity: 618 GWh/yr by 2030 (p.61, table 5.21)	758,597 tCO_2eq/yr by 2030 (p.61, table 5.21)			
5	**RENEWABLE ENERGY:** Low carbon boiler for School #122	Low carbon heating for off grid buildings - Business case for 122 public school (Annex 2,	**GoM:** MET has committed USD (TBC) / MNT (TBC) to replace heat only boiler at School 122			133 tCO_2eq/yr (p.45)		42 t/yr of NOx/SOx/CO reduced (p.45)	

	Program area contributing to impact	Source of impact data	*Investor Commitment mobilized*	POTENTIAL IMPACTS					
				Monetary savings	*Reduced energy consumption*	*SO1: GHG reduced*	*SO2: Green jobs created*	*SO4: Improved air quality*	*Other impacts*
		Document #57, p.45)	with ground-source heat pump						
6	**GREEN URBAN DEVT:** Green kindergarten building in 25th khoroo, Songino-Khairkhan district	Greening Public Buildings in Mongolia (Annex 2, Document #61, p.13)	**ADB:** USD 600,000 committed (as part of a USD 50m loan package) to construct the green kindergarten, mobilized by GoM (not GGGI)	MNT 1,192m in estimated lifetime benefits, including O&M cost savings, and public health and environmental benefits, equal to around USD 446k at time of writing (p.13)	**Coal:** 68-89 tons/yr (p.13)	92-120 tCO_2eq/yr (p.13)			
	TOTAL GGGI IMPACTS QUANTIFIED (Unless otherwise indicated, totals include all individual impacts listed above)		**USD 28.41m mobilized** (Chingis Hotel - $10k, Retrofit of 24 buildings - $4.8m, MGFC - GoM $18m and MSFA $5m, Green kindergarten - $600k)	**USD 19.4m saved, mainly from improved energy efficiency**	**Electricity: 879 GWh/yr** **Thermal: 701,295 GCal/yr** **Coal: 78,101 tonnes**	**1,475,944 tCO_2eq/yr** (Includes 15 DEs, retrofit of 375 residential buildings, ES&L program, HOB replacement for School 122, and the green kindergarten. **This potential impact equals 20% of the annual GHG reductions Mongolia aims to achieve in 2030 under its NDC.** (Note: MGFC excluded as its potential impacts are based on	**3,068 new jobs created**	**83 t/yr of air pollutants (NOx, SOx, CO, PM10, PM2.5) reduced**	**68,000 residents gain access to more energy efficient housing**

	Program area contributing to impact	Source of impact data	*Investor Commitment mobilized*	POTENTIAL IMPACTS					
				Monetary savings	*Reduced energy consumption*	*SO1: GHG reduced*	*SO2: Green jobs created*	*SO4: Improved air quality*	*Other impacts*
						broad market assessments, and will likely change depending actual projects that MGFC finances.)			
	GOM TARGETS	Mongolia NDC (for SO1, SO3) National Program for Reducing Air and Environmental Pollution, as reported by GGGI (for SO4)				**Reduce GHG emissions by 7,168,000 tCO_2eq/yr by 2030 from BAU levels**		**Reduce PM2.5 to 70 mcg/m3 by 2025 (from 256 mcg/m3 in 2016)** **Reduce PM10 to 100 mcg/m3 by 2025 (from 279 mcg/m3 in 2016)** **Reduce SOx to 50 mcg/m3 by 2025 (from 89 mcg/m3 in 2016)**	**Reduce building heat loss by 40% by 2030 (from 2014 levels)** **Increase renewable capacity from 7.6% in 2014 to 30% in 2030**

2. IPR FINDINGS & RECOMMENDATIONS

Findings and recommendations are organized around 4 main questions:[5]

1. Has the program identified clear goals to aim for?
2. Has the program identified clear pathways to get there? Is progress being made along those pathways?
3. What are the potential or actual impacts of the program? Is the program pursuing ways to scale up impact?
4. Are GGGI's business reforms supporting delivery of impact in Mongolia? What is working well and what could be improved?

2.1 Has the program identified clear goals/impacts to aim for?

FINDING 1: Within the boundaries set by the CPF, the Mongolia Program has managed to identify clear goals in some areas (energy efficiency, renewable energy/air quality) but less so in others (green cities).

An essential foundation for a strong impact pathway is for programs to have a clear sense of the end goals/impacts at the end of the pathway. Otherwise, as the saying goes, "if you don't know where you're going, any road will take you there".[6]

In GGGI, setting such goals is partly the function of Country Planning Frameworks (CPF). The Mongolia Program was among the first to produce a CPF in 2015, in consultation with the GoM. The CPF gave the Program a general direction and broad thematic boundaries for a 5-year period (2016-2020):

- Transition towards renewable energy and improve energy efficiency
- Accelerate urban green infrastructure development
- Strengthen water management

Since the CPF was adopted, the Program has stayed disciplined and stuck to programming within these 3 areas. That said, the boundaries set by the CPF still cover a large potential area, so the Mongolia Program has needed to home in further on more specific, measurable goals.

The IPR finds that such goal clarity/specificity has emerged to various extents in the energy efficiency and renewable energy/air quality areas. Notably, the Program has fixed its sights on a core set of GoM targets, including some from Mongolia's NDC: reducing GHG emissions by 14% by 2030; increasing renewable energy capacity to 30% by 2030; and reducing building heat loss by 40% by 2030. Other important goals for the Program include GoM's air quality targets for PM2.5, PM10 and SOx to be achieved by 2025, which from the GoM perspective is perhaps an even higher domestic priority than climate change mitigation.

Goal clarification has not yet happened in the areas of green cities. This is not due to a lack of want or ability, but because programming in these areas has been quite limited to date - programming in the green cities area only started in 2017. Hence the need to perform this task has not been as urgent as other areas where more resources were being invested. The Program also views some of its work in the energy efficiency area (notably retrofitting of residential buildings) as overlapping to the green cities area (although IEU did not reflect in the impact pathway diagram, in order to keep it simple).

[5] Questions 1-3 are based on the IPR methodology developed by IEU in its *IPR Guidelines* (v0.1). Question 4 was not in this version of the guidelines but later added to the IPR exercise given its relevance to the ability of Programs to deliver impact.

[6] Attributed variously to Lewis Carroll's Alice in Wonderland and former Beatle, George Harrison.

FINDING 2: The program has gone a step further with goal setting, and begun to quantify its estimated impacts in various areas. The development of these estimates tends to happen during implementation rather than upfront.

Program goal setting is increasingly happening in relation to GGGI's 6 Strategic Outcomes (SO). Learning to do this well is part of GGGI's strategy to secure its longer-term financial sustainability, by demonstrating itself as an impactful organization. GGGI remains at an early stage of this journey, with still much to learn and improve. Hence, the IPR looked specifically at Mongolia's experience to identify potential lessons.

In rolling out the SO agenda, HQ recently ran a corporate exercise seeking 3 types of goals/targets from country programs, with the aim of aggregating these into organization-wide targets for *Strategy 2030*:

1. Goals/targets of partner countries that GGGI wishes to support;
2. Targets relating to the quantified estimated impacts of current program activities;
3. Targets relating to the quantified estimated impacts of current program activities, if scaled up.

The IPR found that the Mongolia Program has generated several impact estimates relating to (2) and (3), as shown in **Figure 2** above. These numbers will be discussed more below, so we save this discussion for later. However, it is worth noting here that such estimates were mainly possible for program activities that had moved well into implementation. In these cases, outputs had been delivered (with the help of external experts) that contained technical analysis and calculations relating to potential impacts.

Despite having such estimates available, the Program experienced difficulties in complying with requirements of the corporate target setting exercise. This was due to the technical challenges of trying to convert available estimates into the submission formats and calculation methods required by the corporate templates/guidelines.

2.2 Has the program identified clear pathways to get to impact? Is progress being made along those pathways?

FINDING 3: In the energy efficiency area, strong pathways to impact have been identified. Steady progress is being made against these pathways. The Program has a solid track record in terms of delivering outputs. Achievement of many critical outcomes needed to realize impacts is still a work-in-progress.

In 2015, the Mongolia Program was firmly situated at the left side of the value chain, working mainly with the Ministry of Environment and Tourism (MET) on the National Green Development Policy (NGDP) and related issues.

Since then, the Program has made a series of programming (and partnership) choices in the energy efficiency area that together created a pathway to the right side of the value chain. As a result, the Program is now positioned within 'striking distance' of measurable impacts.

These pathways run through specific niches identified by the Mongolia Program, including: energy standards and labeling; energy efficiency retrofits of residential buildings; and assisting high energy consumers (based on thresholds under Mongolia's Law on Energy Conservation) to reduce energy use.

These are not just a series of disconnected activities along the value chain. The IPR found clear and logical causal connections between many of the activities (as shown in the diagram in **Figure 1**). Downstream efforts to develop investable project opportunities in energy efficiency have been strategically linked to mid-stream

efforts to reduce/remove financing barriers. This is being done mainly through attempts to deliver cheaper, green financing via the establishment of the Mongolia Green Finance Corporation and stimulating a range of financing modalities (particularly ESCOs) to help the energy efficiency market take off. More recently, the Program has also worked to develop government incentives that could enhance the risk-return profile of energy efficiency investments.

Key success factors that have enabled the emergence of a strong impact pathway include:

- Many of GGGI's programming choices were informed by a single diagnostic study undertaken during 2014-15, the *Strategies for Development of Green Energy Systems in Mongolia (2013-2035)* report. This has proven to be a highly influential piece of work that provided a roadmap to guide programming in energy-related areas.
- Progress in the energy efficiency area has been underpinned by strong partnerships with strategic counterparts. The Mongolia Program was able to expand beyond the initial host counterpart – MET – and forge new relationships with others, including the Energy Regulatory Commission (ERC)[7], Ulaanbaatar Government, and financial sector actors (Mongolian Banker's Association/Mongolian Sustainable Financing Association).
- The Mongolia Program has enjoyed stability in key energy staff in the country team, which has been a key factor in driving progress. By comparison, there has been greater turnover in green cities-related staff in the country team and thus less progress has been made in that area.
- Ability to access technical expertise, either internally or through outsourcing, has become increasingly critical as the Program has moved towards the right of the value chain. Some of this expertise has been accessed internally, primarily from IPSD, where available. However, given the breadth of issues that the Program works on (even just in energy efficiency alone), the need for outsourcing has been inevitable. Sufficiency of resources in past years to procure outside expertise where needed has thus been essential to the emergence of a strong impact pathway.

Having confirmed that the Mongolia Program has established solid pathways to impact in energy efficiency, the next question is how much progress is being made along those pathways? On this question, the IPR has the following key findings.

Outputs: Progress in delivery of outputs is not shown in the impact pathway diagram in **Figure 1**. However, in general, the IPR found no problem here. The Program has delivered everything it has promised to deliver (in logframes) in a relatively timely manner. Based on stakeholder interviews, the consensus amongst Mongolian partners is that GGGI is a reliable performer in this regard and the technical quality of work is high.

Policy outcomes: On the left side of the pathway, progress in achieving policy outcomes appears positive overall.

- The NGDP Action Plan and National Energy Efficiency Action Plan (NEEAP) – both of which GGGI helped to prepare - were officially approved by the government. These policies provided the mandate (as well as intelligence and relationships) for the Program to move into several downstream areas.
- The Ulaanbaatar NDC investment plan ultimately failed to gain approval from the Ulaanbaatar Government. However, it was a "successful failure" in the sense that it led to further downstream opportunities to work with Ulaanbaatar Government on retrofitting of residential buildings.
- The energy standards and labeling (ESL) policy is currently awaiting adoption by the government and stakeholders were optimistic that this would happen within 6- 12 months. This work stands out as

[7] ERC is Mongolia's energy regulator and has a mandate to develop policies and regulations for all energy projects.

particularly impactful. As an enforceable regulation (rather than voluntary policy/plan), ESL has potential to directly trigger quite sizable impacts, with estimated GHG reductions of around 758,000 tCO_2eq/yr. Though direct ex-post monitoring of these impacts is not possible, evidence reviewed by IEU[8] from similar regulations in other countries suggests that ESL does indeed lead to uptake of energy efficient products and reduced energy use.

Project development and financing outcomes: These outcomes were mostly in progress at the time of review.

- The likelihood of a successful outcome for MGFC remained unclear at time of writing and was mostly dependent on a GCF decision on whether to finance the initiative. Although investor commitment from some partners has been reported internally as achieved, GCF has not yet committed, and the MGFC will probably not proceed unless they do. At present, stakeholders hope that the GCF will put the MGFC proposal to their Board for approval in March 2020. The MGFC can be characterized as a high-risk, high-reward solution to tackle financing barriers. However, GGGI's decision to pursue the MGFC instead of easier alternatives has been supported in a recent external review commissioned by GCF, which found that *"the MGFC is indeed the right answer in addressing the market gap for green finance in Mongolia"* and *"has the potential to become a transformative institution"*.[9] Whatever the eventual outcome, the MGFC stands as a good example of GGGI being willing to back innovative, riskier solutions that have higher potential for transformative change.

- The Mongolia Program is also attempting to stimulate the market for energy efficiency by exploring and activating various financing modalities, such as energy service companies (ESCOs), energy performance contracts and upfront financing. In addition to developing investment projects, the Program has also supported Energy Regulatory Commission (ERC) to establish the necessary regulatory and institutional tools, enablers and incentives for this. As with any intervention focused on creating 'enabling environments', the odds and timing of success are uncertain but the benefits potentially very large.

- The Program undertook investment-grade energy audits of 15 public/private entities designated as high energy users under Mongolia's Energy Conservation Law. These have helped demonstrate the business case for investing in energy efficiency, but whether these projects will end up being financed depends on the success of the financing interventions described above.[10]

- Energy audits and business cases to invest in energy efficiency retrofitting of residential buildings have also been developed. During IEU's mission in Ulaanbaatar, the Program received news that it had successfully moved to the 2nd step of an application process to secure EUR 18m of investment from the NAMA Facility. If successful, the funds would go towards retrofitting 375 residential buildings in Ulaanbaatar, with potential for future scaling (see Finding 6 for more details). GGGI will receive funding of EUR 380,000 to prepare a detailed proposal in the 2nd step. If successful, implementation of the retrofitting works would be led by GIZ.[11]

[8] Details on the evidence reviewed by IEU has been summarized and published on the Green Growth Evidence Base section of the *Impact* sharepoint site.

[9] Preliminary report by the Green Investment Group, engaged by GoM/GCF to review the MGFC proposal.

[10] That said, one private entity, Chinggis Hotel, has already installed 2 variable frequency drives to air handling units (with financial support from GIZ) and achieved a 20% improvement in energy efficiency.

[11] GGGI is not accredited as a lead implementer under the NAMA Facility and does not view its niche as delivering large-scale construction works.

FINDING 4: In other areas beyond energy efficiency, the Mongolia Program has not yet identified clear impact pathways and remains in exploration mode. Core budget performs an important role in supporting these early stages of programming, which is hard to secure earmarked funds for.

Beyond energy efficiency, the Program has taken initial programming steps in several other areas:

- **Renewable energy/Air quality:** Battery storage, and low carbon space heating in buildings without connections to district heating.
- **Green cities:** Green buildings, revising the Law on Urban Development
- **Climate policy:** 2020 update to Mongolia's NDC and MRV development.

The status of GGGI's programming in these areas is best described as 'exploratory'. The Program is actively searching for new and appropriate niches that GGGI could settle into, as part of efforts to grow and diversify. For that reason, it remains too early to judge the strength of impact pathways in these areas as they have yet to emerge.

Notwithstanding this, the IPR finds that exploratory programming decisions made so far have generally been based on strategic and impact-driven rationale. For example, GGGI's targeting of coal-fired heat only boilers[12] is potentially very impactful, as they are a major contributor to air pollution in Ulaanbaatar. Likewise, moves to take on NDC-related work (2020 update and MRV) was motivated by a desire to build relationships with a strategic partner[13], lift Mongolia's mitigation ambitions, and better position GGGI for international climate finance which is seen as a more accessible source of earmarked funding in the Mongolian context.

There are some instances where programming choices are not as well justified, and stronger scrutiny could have been applied before resources were committed. This applies to work on revising the Law on Urban Development and the green building materials database, neither of which align well to GGGI's strengths/expertise or hold much strategic value or potential for impact. However, such cases are exceptions rather than the rule.

Brief comments are provided below on the status of outcomes being pursued in these exploratory areas (though until a more settled impact pathway emerges, it is difficult to draw meaningful conclusions about the extent of progress being made towards impact).

Renewable energy/Air quality:

- For battery storage, the initial intended outcome was to see a battery storage project financed and implemented, but the Program appears distant from achieving this, since its work is presently limited to improving the enabling conditions for such projects.
- In terms of clean space heating for peri-urban buildings, a business case to replace coal-fed boilers for one school (School #122) with ground source heat pumps has been completed. This successfully resulted in investment being mobilized, with MET allocating state budget to implement the business case as a demonstration project. Construction work to replace the boiler is scheduled to be finished in 2019.
- A waste-to-energy project based on a PPP financing model failed when Invest Mongolia, the key government counterpart, was dissolved following the 2016 elections.

[12] Focused on buildings in ger (peri-urban) areas, which are often not serviced by district heating systems and thus rely on standalone, coal-fired boilers for heating. It is estimated that such boilers, together with household coal stoves, contribute to around 80% of Ulaanbaatar's air pollution.

[13] MET's Environment and Climate Fund, who is also Mongolia's UNFCCC focal point and the GCF NDA.

Green cities:

- The Program assisted the Ministry of Construction and Urban Development (MCUD) to revise the Law on Urban Development, and the formal adoption of these revisions remains pending at the time of the review.
- A public database on green building materials was built but it was not feasible in this review to evaluate the extent to which there has been an increase in the purchase and use of such materials in the construction industry.
- The Mongolia Program completed the technical design for a green kindergarten in the Songino-Khairkhan district of Ulaanbaatar. This was a project that built on previous work initiated by the Green Technology Center Korea (GTCK). The designs were handed over to MET, and ADB financing for a building partly based on GGGI's design was subsequently secured by the Ministry of Education. The kindergarten is understood to be in procurement stages, with a construction company selected and construction to commence in 2020.
- A package of 10 green education buildings to be financed via a PPP model was ultimately unsuccessful in obtaining support from the Ulaanbaatar City Council to go ahead and was dropped thereafter.

The Mongolia experience suggests that developing an impact pathway is by nature an exploratory process of trial and error, which in turn requires time and resources. By its nature, the work is akin to trying to find and cut a path through 'unexplored territory', by deepening GGGI's understanding of focal problems and/or solutions to address them. It is often difficult to attract earmarked resources for work in these early stages where ambiguity and risks can be perceived as high. Core budget has played an important role in 'derisking' potential project ideas until they reach a point where earmarked donors are more comfortable providing support.

Using this approach, it has taken the Mongolia Program around 4 years to build up a deep and coherent impact pathway in the energy efficiency area. Given GGGI's current core budget situation, it is doubtful that the same depth and quality of programming can be replicated in multiple new areas at once - as the program is trying to do. Unless or until additional earmarked funding can be obtained for early, exploratory-type programming, it would be more impactful to pursue a strategy of 'depth over breadth' and limit expansion to a narrower set of areas than is currently the case.

Although the decisions on which areas to prioritize are best left to the Program, IEU offers the observation that areas relating to NDC policy work and cleaner heating of buildings appear to be good options to consider. This is based on various factors including potential for impact, potential complementarities with past/present work, potential for earmarked financing and potential to strengthen GGGI's visibility and brand in Mongolia.

RECOMMENDATION 1: Unless or until additional earmarked funds can be found, the Mongolia Program should pursue a strategy of 'depth over breadth' and reduce the number of new areas that it tries to diversify/expand into at any one time.

2.3 Given the current impact pathways, what are the potential or actual impacts of the Program? Is the Program pursuing ways to scale up impact?

FINDING 5: In the energy efficiency area, the Program is pursuing policy and investment outcomes that, if successfully realized, could potentially result in GHG reductions equivalent in size to 20% of the annual GHG reductions Mongolia hopes to achieve in 2030 under its NDC.

For this IPR, all available estimates of various types of impacts were identified and collated in a single table, as shown in **Figure 2**. As this table shows, the Program has the potential to bring about a variety of impacts. The most notable one relates to the potential GHG mitigation arising directly from 3 specific activities:

- Energy audits of 15 high energy users – 620,231 tCO_2eq/yr
- Energy efficiency retrofits of 375 residential buildings – 96,891 tCO_2eq/yr
- Energy standards and labelling – 758,597 tCO_2eq/yr

If the outcomes for these are successfully realized (ie: financed and implemented), the potential mitigation impact adds up to 1.47m tCO_2eq/yr. This is equal in size to 20% of the total annual GHG reductions that Mongolia hopes to achieve by 2030 under its NDC.[14]

GHG mitigation estimates were also calculated for the MGFC and equated to 3,386,335 tCO_2eq over a 15-year period. The degree of uncertainty around these estimates is much higher, since they depend on the final design and actual lending operations of the MGFC. There is also some overlap between this figure and the potential GHG reductions estimated for the 2 investment projects above. For that reason, the MGFC figure was excluded from the calculations above to avoid the risk of inflated claims about GGGI's impact.

All these estimates should be treated cautiously, as they contain many assumptions and successful achievement of the outcomes is still uncertain. The IPR did not, as part of its current scope, seek to verify these estimates based on commonly accepted industry standards for GHG mitigation or other co-benefits. That said, the IPR finds the numbers to be positive sign that the Mongolia Program has made smart, impactful choices and positioned itself within reach of delivering significant, measurable impact. Given this advanced state of progress and the resources already committed by GGGI to get to this point, it is important that the Program be given time and support to allow these efforts to reach a conclusion, one way or another.

RECOMMENDATION 2: In the event of a need to adjust core funding to country programs in the next few years, core funding levels to the Mongolia Program should be maintained long enough to allow existing activities with potentially high impact (eg: the NAMA Facility proposal and MGFC) to reach their conclusions.

FINDING 6: The Program has been proactive in developing and applying various strategies to try and scale up impact.

The IPR finds that the Mongolia Program thinks proactively beyond the impact of individual projects/policies to how these impacts can be scaled. They have implemented various strategies designed to scale, which are summarized below. Most focus on tackling barriers to private financing for green projects. This is important in the Mongolian context given the public debt/deficit situation since 2012 which led the GoM to obtain a USD 434m IMF bailout package in 2017.[15]

- **PPP:** One of the earlier scaling efforts (2015-16) was to work with Invest Mongolia (and later, ADB) to promote increased use of the PPP model to mobilize more finance for green and social projects. This involved a combination of policy/technical advice and developing pilot green PPP projects (waste to energy, green education buildings) which GGGI hoped would serve as examples that could be replicated. Ultimately this work was unsuccessful, mainly due to the disbanding of Invest Mongolia following elections in 2016.

[14] Mongolia's current NDC commits to a reduction of 7.3m tCO_2eq/yr by 2030 (14% below BAU levels).

[15] Part of a broader $5.5 billion financing package supported also by Japan, Korea, China, the World Bank, and the Asian Development Bank.

- **MGFC:** As noted above, the MGFC aims to enhance supply of cheaper financing with terms better suited to the nature of green projects. Programmatically, there were strong linkages made between the MGFC work and downstream work on developing energy efficiency investment projects. For example, the energy audits for 15 high energy users informed broader market assessments undertaken for the MGFC. Ultimately, it is intended that the MGFC could help unlock financing for not just for these 15 projects, but many others like it. As noted above, a recent external review commissioned by GCF found that the MGFC "*has the potential to become a transformative institution".*[16]

- **ESCO:** Kickstarting an ESCO market has also been a key scaling strategy pursued by the Program, to (among other things) help reduce the upfront costs of investing in energy efficiency. Working closely with ERC, the Program has assisted with: brokering relationships with overseas ESCOs in China and Slovakia to highlight business opportunities in Mongolia; establishing the 'institutional infrastructure' needed for a functioning ESCO market (eg: energy performance contracts, standard offer programs); and promoting reforms that strengthen incentives for energy efficiency investment (eg: tariff reform).

- **Retrofit of residential buildings:** One of the more impressive scaling efforts in the Program relates to the retrofitting of residential buildings.
    - The Mongolia Program began with a small core-funded activity: energy efficiency audits for 3 residential buildings. These buildings were strategically chosen because (a) they represented 3 standardized types of designs that are replicated in the total stock of 1077 pre-cast concrete residential buildings in Ulaanbaatar (b) they would fill a critical data gap in the broader technical literature on the potential energy savings to be gained from retrofitting these types of buildings.
    - The energy audits of these 3 buildings made it possible to develop a larger investment proposal for the NAMA Facility. This proposal ultimately seeks to secure EUR 18m to retrofit not just 3 buildings, but a larger tranche of 375 buildings. As noted earlier, the Program has just successfully moved to the 2nd step of the application process. As a result, GGGI will receive funding of EUR 380,000 to prepare a detailed proposal in the 2nd step. If successful, implementation of the retrofitting works would be led by GIZ.
    - The Program is also proposing to use some of EUR 18m (if secured) to help kickstart the ESCO market in Mongolia (through establishment of an energy efficiency fund, a standard offer program, and on-bill repayments). If successful, the remainder of the entire stock of 1077 residential buildings could subsequently be retrofitted with ESCO financing, without the need for further support from the NAMA Facility.

- **Clean heating of schools:** The Mongolia Program has the ambition of making a big impact on Ulaanbaatar's air pollution, well recognized as amongst the worst in the world. To achieve this, the Program is focusing on finding cleaner alternatives to the +3,200 coal-fired heat only boilers in Ulaanbaatar's peri-urban areas, which (together with over 210,000 household coal stoves) contributes to around 80% of the city's air pollution. To understand the problem and potential solutions better, the Program undertook a pilot project to develop a business case to replace a heat only boiler at a single school (Public school #122). While funding to implement this single business case has been secured (from the MET), the pilot has not yet achieved the bigger picture goal of finding a solution that could be scaled. The Mongolia Program is continuing to refine its search for one, based on lessons from the pilot.

[16] See footnote 9.

2.4 How well is GGGI's new business model supporting delivery of impact in Mongolia? What is working well and what could be improved?

FINDING 7: The Mongolia Program has made strong efforts to transition to GGGI's new business model.

A pipeline of earmarked funding opportunities is being built, with some promising early results. However, core funding still plays an important role, particularly for early exploratory stages of programming, and will remain important to the Program's viability and capacity to deliver impact for some time still.

The Program has grown more impact-driven, nimble and adaptive in the manner that the iGROW reforms intended. This is positioning GGGI well to achieve impacts at scale in the future.

Support from HQ to make the transition smoothly has mostly been good, but there are some key gaps in HQ services and tools that still need attention.

In 2017, GGGI launched a new business model – internally branded as 'iGROW' – which was intended to accelerate the organization's ability to deliver impact at speed and scale and enhance GGGI's competitiveness within the market for ODA funding. iGROW encompasses a large collection of reforms spanning multiple parts of GGGI, but at heart, comes down to 2 key goals.

1. To expand the sources of program funding beyond a few core donors to a more diverse range of earmarked donors, in order to improve financial security and increase the overall resources available to GGGI to carry out its mission.
2. To focus programs more strongly on delivering measurable impacts at scale, while also becoming more nimble, adaptive and innovative in how this is achieved.[17]

Given the relevance of this issue to the IPR, IEU examined the experiences of the Mongolia Program in making the transition with respect to these goals.

Earmarked funding: The IPR finds that the Mongolia Program is actively trying to make this transition. A pipeline of earmarked opportunities had been developed, several proposals were being prepared or have been submitted, and some initial successes achieved:

- GCF Readiness - Funding of $350,000 was secured in 2018 to support the development of the MGFC, and this work concluded at the end of 2018. The Mongolia Program is preparing to submit further readiness proposals to GCF later this year.
- NAMA Facility – Funding of EUR 380,000 has just been secured to fund the preparation of a detailed proposal for retrofitting of 375 residential buildings in Ulaanbaatar.
- ADB – Currently waiting on outcome of a proposal for approximately USD 2m, submitted together with the Mongolia Sustainable Finance Association (junior partner) to set up a fund for green housing construction projects in peri-urban areas of Ulaanbaatar.
- NDC Partnership – Currently preparing a proposal for up to USD 1.8m funding from the Climate Enhancement Action Package to support GoM with NDC revision, implementation and/or financing.

Despite this, maintaining current levels of core funding will remain important for the ability of the Mongolia Program to deliver impacts for some time yet, for a few reasons:

[17] This operating model is inspired by similar "lean innovation" business models popularized by Silicon Valley tech firms and start-ups, which has spread to many other sectors, including the social, environmental and aid sectors.

- Core funding plays an important role in early, exploratory stages of programming in new areas where the impact pathway is still being clarified and defined. The experience of the Program suggests it is not easy to replace this with earmarked funding, as donors are generally prefer to invest in project ideas that are more well defined (ie: focal problems and solutions are well understood and specified) and where GGGI has some track record in-country to show.

- Much of the earmarked funding available in Mongolia is not targeted to energy, the area where GGGI is currently most focused. This mismatch is not surprising, since at the time the existing CPF was developed, availability of earmarked resources was not a key criterion in the selection of GGGI's focus areas. However, the Program team intend to factor this criterion into preparations for their next 5-year CPF, which are about to commence.

Achieving impacts at speed and scale: As evident from earlier sections of this report, the IPR finds that the Mongolia Program is very much operating in the way envisaged by the iGROW reforms. The Program is clearly thinking about scale at the start, not at the end, of projects. Several projects have been designed as pilots, with the deliberate goal of deepening GGGI's understanding of a chosen problem, testing potential solutions, and the scalability of those solutions. The work on retrofitting of residential buildings and heat only boilers are good examples of this. Whether they succeed or fail, these pilots are happening in a relatively lean and fast manner, which is the kind of rapid, innovation-driven behavior that iGROW promotes. Proof of the merits of this model lies in the fact that, within just a few years, the Mongolia Program positioned itself to potentially contribute to 20% of Mongolia's NDC mitigation target (subject to key outcomes being achieved).

HQ support to transition: A key function of HQ teams (especially in OED and SPC) is to enable frontline country programs to deliver impact at speed and at scale. In this regard, the Mongolia Program expressed satisfaction with the support services and tools provided by HQ to make this challenging transition. GGGI Online and CRM were both cited as systems that are both user-friendly and useful for staff in the field. A key reason for this was that both systems eliminated information silos and gave visibility to what was happening in other GGGI countries. Support from the Partnerships team and various technical specialists in IPSD was also noted as good in general.

There do appear to be some important gaps that still need attention in order to fully realize the intended benefits of iGROW reforms in the Mongolia Program.

- The ability to identify and absorb suitable IPSD (and other divisional) experts into project work - particularly earmarked funded projects - remains challenging. Two major reasons for this include the absence of a central register of staff CVs and the usability of *ERP People Planner*.
    - GGGI lacks a central repository of staff CVs that is easy to access/search and kept up to date. Without this, country teams have difficulty simply knowing who the internal experts are and what they can do. The most recent SABA-based effort to build such a repository was viewed as not easy to comply with and duplicates information already available in CVs submitted to GGGI or LinkedIn profiles.
    - In addition to identifying suitable experts, booking them into projects is also difficult. *ERP People Planner* is still a new tool, but its interface is not proving user-friendly and there is reportedly some mismatch with how teams build their project budgets in reality.
- When there is no internal expertise or consulting budget available, staff have needed to undertake technical training to upgrade skills to meet Program needs. Current L&D arrangements in GGGI are not well geared to support this, resulting in staff having to bear these costs personally.

- The absence of a HCA in Mongolia creates a number of legal and operational challenges. These will not be discussed further here, as there is a separate internal process underway to deal specifically with these issues.[18]
- Well planned and predictable budgeting processes that yield early visibility of core budgets is essential for smooth country program operations and good counterpart relationships. In theory, the revised WPB process should have improved things in this regard, by providing programs with a certain yet flexible 2-year (core) budget envelope on which to base planning. However, the turbulent budgeting process, late confirmation of final country budgets for 2019, and inadequate planning for how the WPB would be operationalized in terms of ERP and PCM systems, was unhelpful to country operations. There is ample opportunity to improve this moving forward.
- The significant time involved in preparing earmarked proposals should be recognized through dedicated budget codes in GGGI's systems. This would avoid the perception that country programs are being 'unproductive' and can help inform GGGI's policies/strategies to recover resource mobilization costs.

RECOMMENDATION 3: In the ongoing implementation of iGROW, issues that still need priority attention include: (a) improving the usability and usefulness of *ERP Project Planner;* (b) establishing an functional central repository of staff CVs; and (c) improving the timeliness and predictability of budget preparation processes and its integration with other key business systems and processes.

FINDING 8: Mongolian partners are highly positive about the value of the Mongolia Program, and there is no shortage of demand for GGGI's support. However, they have also noticed growing resource constraints, which has raised questions about GGGI's ability to deliver moving forward.

As part of the IPR, IEU had the opportunity to meet with key in-country partners that the Mongolia Program is working with. Overall, the IPR found that partners held the Mongolia Program in very high regard. Compared to other development partners, GGGI's strengths and value add were seen as:

- Flexibility, nimbleness – other development partners can take 6 months just to respond to requests for assistance whereas GGGI is much faster.
- Risk appetite – GGGI was willing to help develop and support the MGFC, while others declined as it was perceived as too risky.
- Policy and investment expertise – a unique skillset that enabled GGGI to bridge the culture gap between public and private partners and bring them together on multiple activities.
- International presence and networks – GGGI leveraged its international reach and connections to expose Mongolian partners to best practices and new partners in China, Philippines, Slovakia and USA, which they highly valued.
- Collaborative, results-driven approach – compared to others, GGGI staff work as "one team" with partners, are attentive and easy to work with, and overcome challenges to get results where others have previously tried and failed (eg: retrofitting of residential buildings).
- Technical expertise – GGGI provided specialist expertise, either through internal staff or outsourcing, that addressed critical technical bottlenecks holding back GoM policy/investment priorities that they lacked the budget to acquire.

[18] GGGI's Staff Council has undertaken a survey of staff in countries without a HCA (or active HCA) and findings have been presented to MT.

At the same time, it was clear that most partners were aware of growing (core) budget constraints, partly because many requests for support have had to be turned down. They are also noticing that these constraints, in some cases, are eroding GGGI's ability to continue delivering the valued benefits/advantages listed above. This applies not just in Mongolia but other locations also. For example, several partners noted the downsizing of the China Program and commented that this was regrettable as GGGI's presence and work in China had delivered significant benefits to them. Some partners also noted how other development partners pursuing earmarked funding had become increasingly diverted from GoM priorities and cautioned GGGI to manage this risk carefully.

OVERALL CONCLUSION:

The Mongolia Program is on a clear pathway to impact in energy efficiency area, as a result of good programming choices made between 2015-2019. This has put GGGI in a position to potentially contribute to GHG reductions equivalent to 20% of the annual GHG reductions Mongolia hopes to achieve in 2030 under its NDC (pending key outcomes being realized). In addition, there is real potential to scale this impact in future, thanks to the proactive attention the Program has given to the issue of scaling.

The Program has ambitions to develop similar pathways to impact in other areas (renewable energy/air quality and green cities) but these efforts are still at an early, exploratory stage. Given core budget constraints, the Program needs to carefully manage the balance between bringing existing programming efforts to fruition by converting potential impacts into realized impacts and expanding into new areas to position GGGI for the future.

At this point, GGGI can best support the Mongolia Program by (1) maintaining core support long enough for existing potentially high impact activities to reach their conclusions and (2) addressing key identified gaps in HQ services/tools that seem to be hindering in-country operations the most.

3. GGGI MANAGEMENT RESPONSE

Recommendation	GGGI Management Response
1. Unless or until additional earmarked funds can be found, the Mongolia Program should pursue a strategy of 'depth over breadth' and reduce the number of new areas that it tries to diversify/expand into at any one time.	**The recommendation is agreed**. Planned core-based programming for the Mongolia program in 2020 already focuses primarily on both policy and investment in energy efficiency. Expansion in other areas (e.g. climate policy and NDC support, renewable energy, air pollution etc.) is to be enabled via the raising of earmarked funding. The next version of Mongolia's Country Planning Framework, to be elaborated in 2020 shall also clearly outline how future thematic expansion plans connect to impact and resource mobilization.
2. In the event of a need to adjust core funding to country programs in the next few years, core funding levels to the Mongolia Program should be maintained long enough to allow existing activities with potentially high impact (eg: the NAMA Facility proposal and MGFC) to reach their conclusions.	**The recommendation is agreed.** We will make the necessary efforts to mobilize funding (core and earmarked) to the best extent possible to support the program in Mongolia.
3. In the ongoing implementation of iGROW, issues that still need priority attention include: (a) improving the usability and usefulness of ERP Project Planner; (b) establishing an functional central repository of staff CVs; and (c) improving the timeliness and predictability of budget preparation processes and its integration with other key business systems and processes.	**The recommendations are agreed** (a) The recommended actions are well underway. Since January 2019, GGGI Online (GO) was launched and became functional as the main central project design, development, management, and monitoring and reporting platform. As the full cycle of the five PCM completes and organically linked to GO since the revamp of PCM processes, Mongolia teams' feedback along with other country level lessons learnt are being reflected into the system. The central focals on this action will be GGPI front office for GO; Finance and TSU for budget and people planner modules and interfaces. (b) For the central repository of staff CVs, HR requested updated CVs from different units/team earlier. Given the growing needs of utilizing the CVs for funding proposals, a follow-up action will be taken by HR before the end of 2019. The central repository can be placed in the sharepoint people & culture section which is managed by HR. (c) The budget preparation process will learn from the first round of WPB 2019-20 with the aim of being simpler and more efficient .For the predictability of the budget preparation, the planning around future WPB will be done in a way that country teams have a clear understanding on the timelines and expectations as well as the responsibilities in the preparation of the budget.