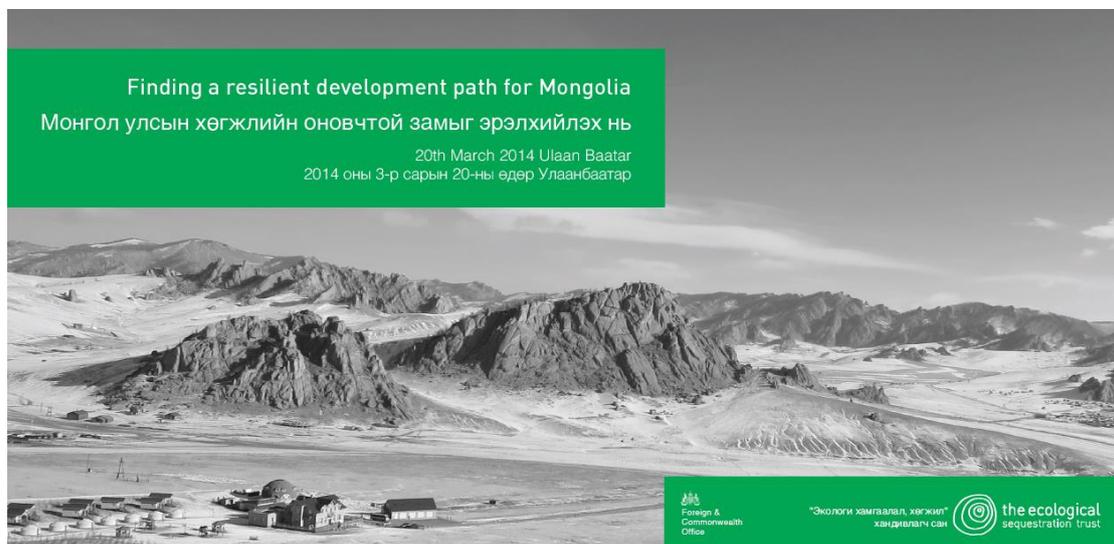


Supporting resilient high quality growth in Mongolia

Feasibility Study January - March 2014



Executive Summary

This study investigates whether The Ecological Sequestration Trust (TEST) investment and planning decision-making platform would be a feasible solution to improve transparency and increase the evidence base for, resilient and sustainable development planning and investment decision-making in Mongolia. It concludes that developing and implementing this kind of multi-sector stakeholder structure, which harnesses the input of the private, public and third sectors, is critical to developing targeted and effective planning and investment decision making. Further, that establishing and strengthening forums where the private and third sectors have a formal role to dialogue with government, should result in better policy and development outcomes for the people of Mongolia and the preservation of their rich cultural and ecological history.

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Mongolia is at a crossroads due to ongoing double digit growth and has recognised that its current brown industrial development path needs to be challenged and changed. There is an understanding in Government of the urgent need for a more integrated approach in the face of climate change and fast urbanisation. The combination is putting great pressure on the environment but the balance between environmental protection, revenue generation from the mining industry and the opportunity to improve both human health and well-being has not yet been achieved. There is also a need for financial incentives and technical specifications that are enforced to make Mongolia more attractive for Foreign Direct Investment.

In order to establish the appropriateness of the TEST investment and planning decision-making platform three research questions were posed: (1) is there sufficient cross-sector interest and appetite for a more sustainable model of developmental investment decision-making, (2) which are the pressing issues Mongolia faces and might be addressed through the TEST platform, (3a) would the TEST platform work from an ecological, economic and social perspective and (3b) how might such a model be governed and managed, and (3c) what are the potential risks? These were answered via desk-based research and field trips to Ulaan Baatar, culminating in a high-level workshop for 45 individuals across private, public and third sectors carried out between January and March 2014.

The missions established a high level of interest in a systems-based sustainable development-oriented platform, to aid decision makers in development planning and investment, from the Ministry of Environment and Green Development and the Ministry of Economic Development. The ability of TEST to lower risk through the provision of a robust evidence base and thereby improve Mongolia's access to international finance appeared a key driver of support shown by the private sector through the CEO Club. The Trade and Development Bank confirmed that the proposed financial model of a rolling Mongolia Development Fund at 5% GDP per year was realistic. The academic institutions of the Ulaan Baatar Science University and the Economic Research Institute, the University of Mongolia, Mongolian Academy of Science and the National Development Institute all showed depth of understanding in and support for the approach, along with civil society premiers and international funders, especially ADB and also JICA, IFC, WB and 3Gi plus WHO, UNEP and UNDP.

There is a consensus of opinion that the TEST model platform would work as a planning and investment tool for Mongolia, based on its professional macroeconomic way to deal with debt and liquidity and to provide an evidence base for risk. The platform is seen as an important "collaboratory"¹ space for innovation in practice and policy. Moreover it would offer invaluable support to Mongolia's "Smart Government" initiative. Its legal governing body should be multi-stakeholder owned and operated, with equal representation of third, private, academic and government sectors, and above all, independent. It has been suggested that Mongolia should establish an SDSN National Centre, and that existing models such as the UNEP PAGE would integrate well into the TEST model. Ministry of Economic Development confirmed that with the assistance of international funding it would take the lead, garner cross-Government support and help implement the TEST Mongolia demonstrator project. Mayor Bat-uul has requested the TEST platform to be used for planning and investment for the UB capital city region².

¹ TEST has coined the word "collaboratory", a collaboration laboratory, to describe the convening and facilitation space governing the TEST model.

² This specific request was made at a private meeting between Mayor Bat-uul and Peter Head during a follow up mission to Mongolia 21st – 24th May, 2014.

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Introduction

In support of the Foreign and Commonwealth Office CBP objective “supporting and embedding democratic practice and good governance for sustainable development“, this study investigates whether The Ecological Sequestration Trust (TEST) investment and planning decision-making platform would be a feasible solution to improve transparency and increase the evidence base for, resilient and sustainable development planning and investment decision-making in Mongolia. A core objective of TEST model implementation would be to provide Mongolia with the tools and understanding through a collaborative approach, to find its own resilient path to good governance and development. The proposed platform is being developed in the UK with support of the Department for International Development (DFID). If gauged suitable and adopted, Mongolia would join the TEST demonstration regional network and be supported by a global network of world leading experts.

Background and rational

Mongolia is struggling to find a resilient economic path, with accelerated growth over the past decade; global fluctuation in mineral prices, a lack of infrastructure and rapidly growing health and social problems caused by poor urban living conditions of a swiftly urbanising population (Plates 1 and 2); 68% of the 2.9 million total population now live in urban areas, of which 43% are in the capital Ulaan Baatar. Mongolia is making rapid decisions about its future in an effort to keep pace with this exponential growth and has pursued a rapid development path in which spending has run ahead of mineral mining revenues; the World Bank estimates baseline GDP growth at 12.5% for 2014 with inflation just under 10%. However, poor monetary policy has led to accelerating credit growth, and mounting balance of payments pressures pose a significant challenge to the economy, as FDI inflows decline and mineral exports remain weak (World Bank 2013). Expansionary fiscal policy pushed the deficit (including operations of the Development Bank of Mongolia to 10.9 % GDP in 2012 and spending now exceeds 57% of non-mineral GDP. The trade deficit, though narrowing, is still large (IMF 2013). Recent volatility in exchange rate fluctuations under-score the importance of proper economic planning and investment policies to address mounting balance of payments pressure, and to attract new capital inflows. Choosing the right planning and investment strategies is now critical.



Plate 1 Ulaan Baatar under smog³ veil, January 2014 (Allinson 2014); Plate 2 Ger district – residents use coal as their primary fuel source for heating and cooking, January 2014 (Cherrett 2014).

³ Winter temperature inversion exacerbates the problem of pollution with severe effects on health and rendering international aircraft unable to land.

Strategic decision-making is critically constrained by a lack of understanding of good data. Accessing reliable data on primary production, marketing and trade presents a major challenge in developing and monitoring appropriate policy interventions in Mongolia. Policy is sometimes based on perception and interested party gain rather than robust evidence.

Substantial progress has been made in regard to several Millennium Development Goals at the national level with Mongolia expected to achieve 71% of the global MDG targets by 2015, though significant regional disparities prevail or are increasing⁴ (Government of Mongolia 2013). Poverty in Mongolia has declined steadily from a high of more than 38.0% in 2010 to 27.4% in 2012 (UNDP 2013), though the population remains vulnerable to food prices shocks and natural disasters. Mongolia lags significantly on Goal 7; “Integrate the principles of sustainable development into policies, eliminate air pollution in urban areas”, finding it difficult to achieve. Goal 8, to “Create favourable condition for achieving MDGs through developing trade and financial system” is also proving a challenging to achieve along with Goal 9, “Fully respect and uphold the Universal Declaration of Human Rights, ensure freedom of media and provide the public with free access to information” (Government of Mongolia 2013). Mongolia’s human development index (HDI) is 0.675 and Mongolia is ranked 108th out of 187 countries, slightly below its Asian comparatives.

With such a rich cultural and ecological history, the long term consequences of following the traditional path of rapidly industrializing developing nations with unplanned and inappropriate development are severe for Mongolia, if action to improve the decision and investment making process is not taken immediately.

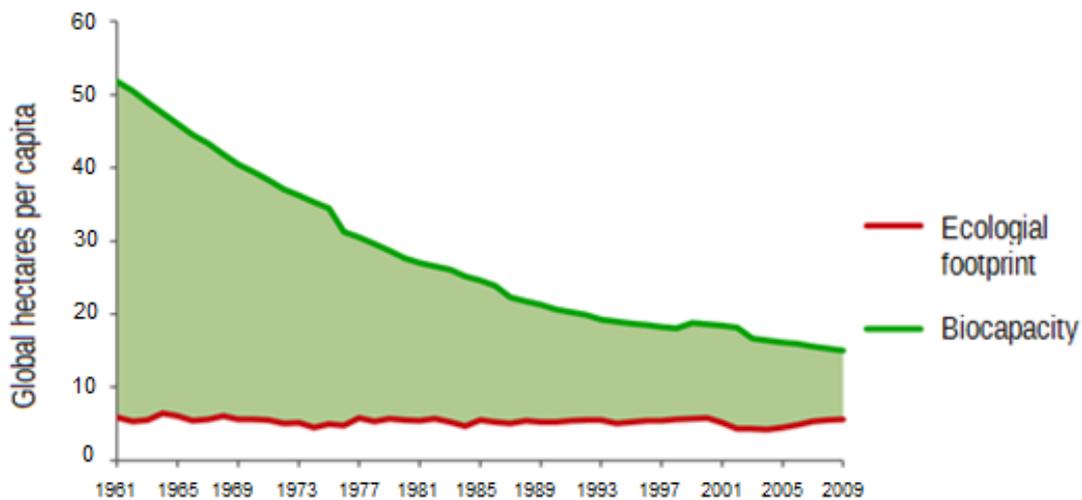


Figure 1 Per-person resource demand ecological footprint⁵ and biocapacity⁶ in Mongolia since 1961 (Footprint Network 2014)

⁴ Government statistics suggest economic disparity of around 40% (Mongolian Economy, April 2014)

⁵ Footprint varies with consumption and production efficiency.

⁶ Biocapacity, the capacity of an area to provide resources and absorb wastes, varies each year with ecosystem management, agricultural practice, ecosystem degradation, weather and population size.

Study approach

TEST has the capability to deploy a 'systems approach' of regional investment and community participation to meet the combined challenges of: (i) climate change, (ii) pollution and cost escalation from consuming finite resources unsustainably (iii) acute societal stresses including poverty and joblessness. The TEST platform could enable Mongolia to integrate sustainable development into economic and human development policies and investment plans, and help to plan strategies for trade and investment that meet these policies. Protection and enhancement of the environment to reverse recent losses could be justified by showing the broader macro-economic benefit of improved farming, herding and forestry practice.

In order to establish whether the TEST investment and planning decision-making platform would be a suitable tool for Mongolia three research questions were posed:

1. Is there sufficient cross-sector interest and appetite for a more sustainable model of developmental investment decision-making, based on indicative political will, economic support, technical capacity, and data availability?
2. Which are some of the pressing issues which Mongolia faces and might be addressed through the TEST platform and what are their potential solutions.
3. (i) Would the TEST platform be perceived to work from an ecological, economic and social perspective and (ii) how might such a model be governed and managed, and (iii) what are the potential risks?

An open, discursive approach was taken for this feasibility study rather than a solely economic approach to gauge answers to the above questions:

1. A first scoping mission to Ulaan Baatar (UB), Mongolia by Mike Cherrett, CEO and Catherine Allinson, Project Manager and Director, Future Earth⁷, in January, targeted appropriate government ministries, (I)NGOs, including international finance institutions, private and academic sector leads with a focus on developmental planning, to gauge interest in and garner support for the TEST approach and uncover where TEST might fit or add a new dimension to existing structure of project planning and delivery.
2. A second mission by Peter Head, Executive Chairman, in February, cemented connections and relationships between TEST and leading organisations established during the first scoping mission and deepened the understanding of the concepts proposed by TEST. Subsequent correspondence has built on the breadth and depth of organisations aware of and enrolled in the TEST collaborative approach in the lead up to the March workshop.
3. The final third scoping mission was carried out in March by Peter Head and Catherine Allinson and included the high-level workshop and follow up interviews with select interested parties.

In order to answer the first research question a two-pronged approach was taken: i) during the three scoping visits a selection of key informant interviews (>30) were carried out with leading and relevant members from government, private and academic sectors and civil society NGOs (see Annex 1 for full list of interviewees); ii) a high-level workshop was held to provide knowledge to public, private, and third

⁷ Future Earth is a research consultancy specializing in sustainability and climate change research.

sector groups in Mongolia to illustrate how data can be assembled into a systems platform for use by governments, the public, planners and investors.

The second question was answered through desk research from the UK, and drawing on the expertise of both the TEST advisory board and leading individuals in the fields (Annex 2) of data modelling, alternative energy solutions, ecology and education, to demonstrate the latest sustainable development practices and technologies that may be relevant to Mongolia's pressing problems.

The third research question was answered through two open discussion sessions of approx. 45 min each at the workshop during the third mission, and after a 45 min presentation on the background, interfaces, capabilities and outputs of the TEST platform. The first session using a Likert scale five ordered category survey, posed the question of whether the TEST approach would work in Mongolia from an ecological, an economic and a social perspective. Discussion tables reported their individual discussion findings in the round and individually answered the survey in Annex 3. The second session discussed which sectors, organizations or groups of organizations should own and manage the TEST platform and how these might be organized.

Case Studies

Exploratory case studies on some of the most pressing ecological, economic and social issues Mongolia faces and based on original research by leading experts in their fields (Annex 2), were presented by Peter Head at a workshop held in Ulaan Baatar on the 20th March 2014.

1. Carbon emissions and watershed management systems as an integral part of a complete ecological system
 - Steppe grassland preservation and management as part of Mongolia's heritage
 - Global carbon cycling, soil carbon and microbial responses in grassland ecosystems
 - Annual orbital cycles and seasonal effect on CO₂ ppm stored and released
 - Use of GIS data in watershed dynamics and management
 - The use of anaerobic digestion of waste biomass to provide local gas for cooking, replacing polluting coal, and nutrients and compost for further food growing
2. Geothermal energy capacity in Mongolia and coupled with district heating and all year round 24/7 food production
 - Location of geothermal releasing fault lines
 - Accessible temperatures > 200 degrees are widespread at depths up to 5 km – 7 km
 - Dual borehole system (injection & abstraction) e.g. Soultz-sous-Forets, France (1.5 MWe, increasing to 6 MWe); Landau, Germany (3 MWe + 4 MWt)
 - Production of heat (cooling as well if needed) - high potential to meet base heating demand
 - Easily deployed units supplying individual dwellings or district heating systems
 - Tourist developments – spas and health benefits
 - Low cost heat for food production and other economic activities
 - Modular geothermal power and year-round food growing using vertical farms with LED lighting and hydroponics in well insulated buildings with no windows

3. Building retrofit
 - World leading demonstrations of 'buildings as power stations' with integration of new technologies in new build and retrofit, such as those at Swansea University Materials Research Centre (MRC) SPECIFIC programme
 - Energy efficiency retrofit including natural lighting, appliances, building services, industrial plant, water management to lower living costs
 - New ecological and affordable low carbon, resource efficient housing and commercial mixed use developments which aim to improve urban and rural economy and human health and quality of life-natural lighting. These could aim to use natural materials available in Mongolia rather than steel and concrete
4. Education and skills capacity building
 - Support to school education programmes around sustainability and regional transformation
 - People-smart regional information systems for all aspects of community, social services and business life
 - Mentoring to young entrepreneurs and Masters teaching on sustainable development and the use of the TEST platform

Results

Sectoral support

Government sector: the missions established a high level of interest in a systems-based sustainable development-oriented platform, to aid decision makers in development planning and investment, from the Ministry of Environment and Green Development, the Ministry of Economic Development and from the Ministry of Industry and Agriculture. Minister Oyun of the Ministry of Environment and Green Development quickly emerged as a supportive leader giving her own and Ministry staff time and support to the project and delivering the keynote speech at the workshop; other government departments may be equally well-placed to take TEST forward should it be adopted. Vice Minister Chuluunbat of the Ministry for Economic Development took a central role at the workshop as speaker. City Mayor Bat-uul was also engaged, indicating a desire to test new models for development to solve investor repelling issues, such as lack of infrastructure and pollution. Ms Gochoosuren Baigalmaa, Vice Minister, Ministry of Urban Planning and Construction indicated they would like to make use of the platform in planning and development of several new towns.

Depth of understanding of systems analysis was found to be generally low amongst non-specialist staff but a greater depth of understanding of both the conceptual framework for the TEST model and its potential applications was found through discussions with individuals at the University of Mongolia, the Mongolian Academy of Science, the Ministry of Environment and Green Development, Ministry of Industry and Agriculture and the Trade and Development Bank. Results-oriented development frameworks are in place (short to mid-term) backed by a desire to learn, test and integrate new technologies if based on proven results.

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Private sector: with mining accounting for 80% exports and 40% total government revenue the private sector is a powerful player in Mongolia led by few key organisations. Oyu Tolgoi⁸ is the largest of these, 34% Government owned and a member of the CEO Club. The latter hosted a special training presentation for members with Peter Head as guest speaker in February. The CEO Club⁹ openly confirmed the support of the private sector umbrella organisation to TEST and its platform approach at the workshop, at which there was slightly elevated percentage of attendees from this (and the third) sector (Figure 2). Randolph Koppa, President, Trade and Development Bank (TDB), a key speaker and panel member, voiced his opinion that the rolling Mongolia Development Fund proposed by TEST at 5% GDP per year is realistic; he indicated that TDB would like to manage the fund and to provide design input into the user interfaces of TEST. TDB would be willing host the City of London Mayor Fiona Woolf in Ulaan Baatar to demonstrate how the City could engage into Mongolia.

Academic and third sectors: workshop panellists Dr Khuldorj, Vice President for Research and International Relations at the Ulaan Baatar Science University and Dr Tuvshintugs, Director of the Economic Research Institute were engaged by the TEST approach after 1-2-1 discussions with Peter Head with further support shown by the University of Mongolia and Mongolian Academy of Science.

International funders: Country leads of the bi/multilateral funding organisations suggested that the international aid/trade agreements would work favourably in support of the TEST approach.

ADB has been supportive of the project since the outset, with multiple discussions held between the Country Director and TEST team member freely exchanging information and suggestions on how to position the platform in a Mongolian context. Peter Head was invited to present to the environment team lead by Daniele Ponzi and infrastructure finance team lead by Trevor Lewis at the ADB HQ in Manila prior to the Mongolia workshop. This was to examine the feasibility of a TEST demonstrator in Mongolia, for wider ADB use of the TEST platform across Asia, and engagement with APEC in China. Members concluded the TEST approach was of great relevance and interest, very ambitious and important.

Nara Luvsan, Partnership for Action on Green Economy (PAGE) Senior Programme Officer for UNEP suggested that PAGE would integrate well with TEST to create the delivery content behind PAGE programme which is currently missing. TEST proposes that a partnership is created with the PAGE team for Policy and Economics. Sezin Sinanoglu, Resident Coordinator, UNDP saw the opportunity to pursue the creation of a National Sustainable Development Solutions Network (SDSN) centre in Mongolia. She took the suggestion to NY and this idea was discussed in the closing discussion at the workshop with Vice Minister Chuluunbat.

Japan International Cooperation Agency (JICA) is sufficiently engaged that they shared the TEST approach at their headquarters and are making introductions to link the Mongolian demonstrator into APEC through their Beijing office.

⁸ Lkhamaa Khishigt, Stakeholder Superintendent was a panel speaker at the workshop.

⁹ Sayanbayar, B CEO Club Executive Coordinator, speaking on behalf of Amarsaikhan, CEO who was traveling at the time of the workshop.

“Finding a resilient development path for Mongolia” TEST workshop

Cross sector attendees totalled 45, and comprised of 73.3% Mongolian nationals from Government (Ministry of Economic Development, Ministry of Environment and Green Development); private sector (mining, green industries, banking, recycling and water, energy); third sector (human rights, ecology, wildlife, communities); academic sector (National University of Mongolia, Ulaan Baatar Science University, American Centre for Mongolian Studies) and international funders (see Figure 2 below and Annex 4).

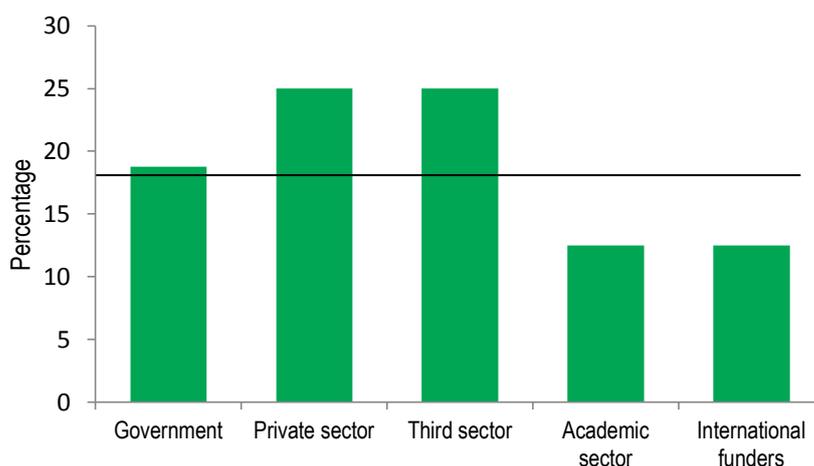


Figure 2 Percentage of workshop attendees by sector, mean = 18.75%, total number = 45.

The workshop was opened by HMA Stuart of the FCO to welcome guests including senior ministers. He emphasised the commitment of FCO in supporting Mongolia to achieve a more resilient development path and explained that the discussion with TEST to come to Mongolia took nearly 2 years to reach fruition. He expressed delighted with the commitment TEST had shown and believed that they could make an important contribution. FCO were pleased to be able to support the feasibility study and enable the workshop to take place and would help draw the work to a firm conclusion by the end of March 2014. The recent WEF meeting highlighted different scenarios that could affect Mongolia, particularly the one in which China follows a green development path in which coal use and mineral demand starts to fall. Mongolia needs a way to manage its economic development to take account of these different scenarios and TEST is likely to be able to help.

The main points of Minister Oyun's keynote address were:

- Mongolia is at a crossroads due to the combination of double digit growth but with oscillations of supply and demand.
- Combination of climate change and fast urbanisation were putting great pressure on the environment and there were deep concerns over the effect of this on population health.
- Poor air quality, potable water supply and river pollution were all serious problems in UB and needed to be addressed urgently
- There needed to be a balance in protecting the environment around mining activities and the opportunity mining created to improve human health and well-being. We have not got this balance right yet.

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- There is an understanding in Government of the need for a more integrated approach and initiatives are underway to achieve this
- There is a sense, therefore, that TEST is a unique opportunity and that the timing is currently right for this initiative
- We welcome the opportunity to be part of an international leading community of practice in sustainable development, facilitated by TEST
- We welcome the focus on cultural history as well as looking forward to a bright resilient future

First speaker Vice Minister Chuluunbat, Ministry of Economic Development, highlighted the following:

- Mongolia was at a critical point and had recognised that the brown industrial development path needed to be changed.
- It is unclear how we should go about protecting the environment and still improve well-being of the population
- Decisions taken on this so far have not been successful and there needs to be a better balance between enhancing and protecting the environment and creating wealth for development that is inclusive.
- The economy has focussed in the past in making products Mongolia did not need and that needed to change
- We need to look holistically at our economic development and find answers to the questions and encourage greater leadership and investment from the private sector
- Government needed to be less of a barrier and we need to move forward in a much smarter way as we will have less investment capital for a while
- It is very opportune that TEST have come to Mongolia now and they could help us find development paths which are most beneficial for the people and are more inclusive

Randolf Koppa, President, Trade and Development Bank, made these points:

- It is very important that green development moves forward with carrots and sticks in place to drive it and incentivise the right outcomes. It is not enough to have an economic development strategy, there also needed to be financial incentives and technical specifications that are enforced.
- If these carrots and sticks are put in place in a comprehensive way, backed by enforcement, then Mongolia will be more attractive for Foreign Direct Investment and new appropriate technology for green buildings and industry, new products for the local market and this will create many new jobs.
- TEST is a positive way to take this forward with their integrated approach that draws all stakeholders together. I believe it will help create the conditions for renewed foreign direct investment.
- If the TEST platform is established, it would enable investment to be based on a professional macroeconomic way forward to deal with debt and liquidity. TEST is a credible planned way to address this and deliver confidence for investors.
- Many organisations have recently signed an agreement to create green funds to finance green infrastructure and so the timing of the TEST initiative is excellent.

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Dr Khuldorj, Vice president Research and International Relations Ulaan Baatar Science University, a highly respected member of the Mongolian Science community, said that he warmly welcomed the focus by TEST on the role science should play in providing the evidence base for decision making. The university is already working hard to assemble data and the TEST initiative would enable scholars to make more of this work. He was keen to see the initiative move forward and welcomed the idea that Ulaan Baatar Science University could take a world leading role and join a cluster of international learning on sustainable development.

Lkhamaa Kh, Stakeholder Superintendent Oyu Tolgoi stated that the TEST approach could be very useful in addressing practical social and environmental aspects at mine operations, including protecting water supplies for farming and local herding. Private companies follow corporate social responsibility practice and new tools are welcome to help improve the outcomes.

Dr Tuvshintugs, Director, Economic Research Institute said that he welcomed the TEST approach and believed that it could help deal with some of the major challenges currently facing Mongolia. The financial environment for business needed to be improved but not at the expense of the environment. This was a very difficult balance and new policies needed to be evolved. He welcomed the potential to partner with the PAGE programme. He welcomed the inclusion of a cultural dimension to the proposals.

Randolf Koppa, President, Trade and Development Bank concluded the panel session by saying that having listened to the TEST presentation (which came after his earlier presentation) he was even more convinced that it could be valuable contribution to helping Mongolia to move forward and away from the current difficulties. He is supportive and would like to help with development of the initiative, including setting of green policies and specifications for retrofit and construction across Mongolia.

Two cultural sessions featuring Ts.Tumenjargal, Long song singer, Byambatsogt, Horse Head Fiddle Player and Violoncello Ensemble of Music and Dance College through the Arts Council of Mongolia, to underscore the importance of cultural inclusion in the TEST model were a unique inclusion for a workshop/conference in Mongolia and well received.

Viability of TEST in Mongolia

Following a presentation by Peter Head on the background, interfaces, capabilities and outputs of the TEST platform, the audience was asked to discuss whether TEST would work in Mongolia from three perspectives; the key points captured were:

From an ecological perspective

- Present lag in our development provides an opportunity (advantage) to move to the new level of ecological development.
- The current Mongolian population remembers the ecological and environmental heritage from the past. It is now most important to remind Mongolia of its ecological tradition and culture.
- Decisions should be based on science. Currently decision-making is political, short-term and not always based on science. In some cases there is insufficient knowledge and research and decisions and implementation is not based on scientific recommendations.
- Rapid development and the mining sector are affecting the nature and lives of the local people negatively in many ways. Therefore, everyone is paying attention to the protection of the environment and the legal environment is also improving. The TEST approach will give an opportunity to develop very important structures and mechanisms.

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- The process of integrated modelling of the component parts of ecology itself will take a long time. Nonetheless, it would be a very productive work if planned and implemented in the right way.
- There is no reason why the TEST platform can't feasibly produce accurate ecological information resulting in economic opportunity, for instance, ten years ago no Mongolians ate eggs; a local company "created" demand.

From an economic perspective

- TEST will foster Mongolia's public sector planning execution and monitoring capacity. Mongolia's public sector lacks macro modelling capacity. The approach coincides with Ecological and Social Accounting which is at infant stage in Mongolia; Mongolia stands on the brink of major infrastructure projects (rail network, highways, power plants); sectoral policy coordination remains very weak.
- Infrastructure/energy data can be very incomplete, especially when looking at independent (not grid connected) use, i.e. vehicles, diesel generator use, stove use. Much income/trade is also in the "informal market" meaning in the *ger* districts and rural areas.
- The modelling from an economic perspective looks correct in TEST. Increasing the coherence between sectors will provide an opportunity to have an accurate plan and expect an effective economic outcome.
- TEST would provide some political continuity as there is no general planning for development. It makes the picture clearer and gives options for high-tech and the government of Mongolia.
- Mongolian people expect the private sector and investors to be responsible. The legal environment is moving to this direction as well. Therefore, business initiatives would be interested in using this system.

From a social perspective

- Social sector stakeholders (civil society, NGO) remain weak and underfunded; institutional framework is still lacking; GDP growth is still prioritized over socially inclusive development; Mongolia's social environment is not quite mature enough to adopt such an advanced systems approach. However, it is precisely through the adoption of systems platforms such as TEST that Mongolia will develop the tools and capacity to change this status quo.
- Involvement of the multiple players in the process of developing, implementing and assessing of the development programme has become a vital issue. Therefore, I think that this system will help in this field.
- The "collaboratory"¹⁰ creates a space for operation which was considered a great opportunity to bring all sectors together. This is of prime importance for "the right to know", "access to information" and other pressing social concerns.

¹⁰ A "collaboratory" is a collaborative laboratory.

Questionnaire results

The non-parametric ordinal data was assessed against the null hypothesis that there would be an equal distribution of answers given by the mixed cross-sector audience with no prior knowledge of the TEST platform. Questions posed in the round and for individual interpretation (full transcriptions in Annex 5) were:

1. Indicate whether this approach works from an ecological perspective (natural resources and their management, climate variability)?
2. Indicate this approach work from an economic perspective (infrastructure, energy, goods and services, individual economic status)?
3. Indicate whether this approach works from a social perspective (culture, education, social advance)?

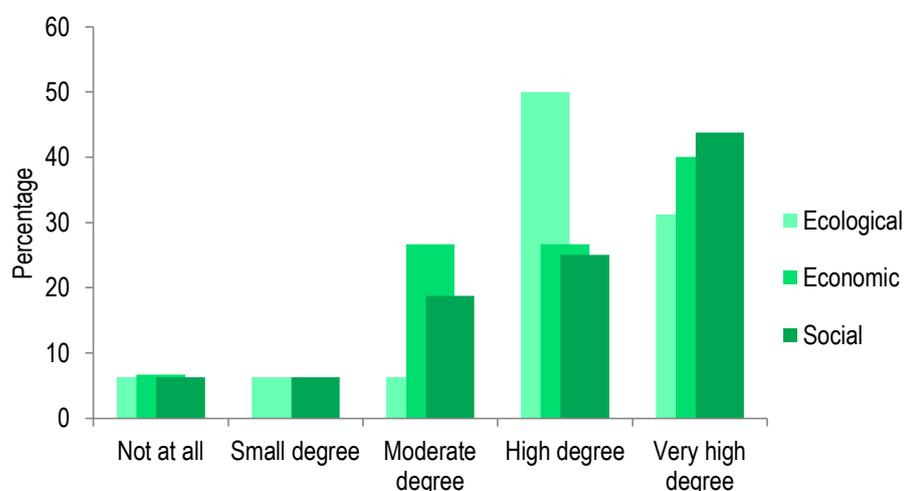


Figure 3 Percentage responses by Likert five ordered category; n=47 responses.

Contrary to the null hypothesis, the collated questions indicate that a significant proportion of respondent answers were not uniform across all the Likert scale (Kruskal-Wallis H test; $K=4.00$, $df=4$, $p=0.028$). Most answers were in the moderate to very high degree category and did not significantly differ from each other in this regard ($K=0.02$, $df=2$, $p=0.988$). This result indicates that the workshop respondents consider that the TEST model platform would work as a planning and investment tool for Mongolia. That there are considerable implementation challenges to overcome is acknowledged and are addressed in the Analysis and Discussion section below.

Governance

Key points gathered from the audience and addressing which sectors, organizations or groups of organizations should own and manage the TEST platform and how these might be organized were:

- TEST would enable a green agenda to come into Mongolia without it being owned by the Government. This mechanism is important and the “collaboratory” serves a space for innovation in practice and policy.
- TEST brings all sectors together which is of great importance, as is open access to data and information for the population. The legal governing body must be multi-stakeholder owned and operated, participatory and inclusive and above all, independent.

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- TEST is logical but the decision-making process in Mongolia is not logical due to short term views, a lack of a singular vision of the future and a number of personal vested interests. TEST might address this and give a clear targeted approach. Further, policy reform would have to take place in parallel for the benefits of TEST to be fully experienced.
- Vice Minister Chuluunbat suggested TEST is led and managed by a central coordination agency lead by the Ministry of Economic Development. This suggestion was not met with a positive response from the audience which suggested that an independent multi-stakeholder owned and operated commission with equal representation of third, private and government sectors would be preferable. It was suggested that Mongolia might consider establishing an SDSN National Centre to host the TEST platform, which is something already being explored by UNDP.
- PAGE would fit into TEST and UNEP welcomes a TEST presentation at the 'outcome of PAGE' meeting in May 2014.

Summing up by Vice Minister Chuluunbat

- The TEST approach is very interesting to the Ministry of Economic Development and we would like to take it forward and lead
- TEST would be very challenging however because it is a costly project and the state of Mongolia's finances is currently not robust.
- Should TEST be financed by international funds, the Vice Minister confirmed he would be able to bring together a committee for cross-Government support and would work with Peter Head and TEST to run TEST as a Mongolia pilot demonstrator.
- The Vice Minister expressed that he is very interested in achieving this and would like speed up the process towards this end.
- Mongolia has different requirements regarding modernisation in education for children and young people, for industry and for infrastructure, which could all be addressed through the TEST platform.
- The TEST approach should enable us to see more clearly how to move away from the disastrous industrial path onto a more resilient one, and to do it in an integrated way within government

Analysis and Discussion

In order to ascertain whether TEST is a suitable solution to improve governance, accountability, planning and investment decision-making in Mongolia, three questions were posed:

1. Is there sufficient cross-sector interest and appetite for a more sustainable model of developmental investment decision-making, based on indicative political will, economic support, technical capacity, and data availability?
2. Which are some of the pressing issues which Mongolia faces and might be addressed through the TEST platform and what are the potential solutions.
3. Simply (i) would the TEST platform work from an ecological, economic and social perspective and (ii) how might such a model be governed and managed, and (iii) what are the potential risks?

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All four sectors (government, private, academic and third) have shown interest and support for the TEST approach in Mongolia, evidenced in meetings and through verbal and written feedback at the workshop.

TEST is seen as an inclusive, scientific-based model which would well serve all four sectors whilst contributing to education, capacity building and the improvement of governance. A joined up approach is now required as integrated projects have been few and far between and the current holistic “Smart government” initiative seeks to develop transparent and responsible governance with inclusive public participation. Further, good investment decisions can only be made based on robust, open data and information, thus there is a significant appetite for quality data research and analysis across competing government departments. Indicative political will from the Ministry of Environment and Green Development was shown from the outset, with the Ministry of Economic Development taking a leading role at the March workshop. The Ministry of Agriculture and Industry was also interested to see how TEST would be applied. TEST would assist in the on-the-ground delivery of the current “Smart government”, “Innovation” and “Government for Reform” agendas. Vice Minister Chuluunbat closed the workshop publicly stating that *“should TEST be funded internationally¹¹ he would actively seek cross-government support and the Ministry of Economic Development would work to implement TEST in Mongolia”*.

Lack of political will, removal of leadership and change in political direction or government structure is a risk. Broadening of support beyond the leadership of the Ministry of Economic Development, planning for TEST to be in place (stage 1) by the June 2016 election and the mobilisation of the academic sector and international development press to promote the TEST approach may mitigate this possibility. A show of interest by TB Associates¹² and the Lord Mayor of London would lend visibility to TEST and its potential for foreign direct investors.

Accountability, fiscal procedural capacity and judicial governance is still weak, though improving. In many ways, a model is less susceptible to these concerns as it is built on multiple layered data not easily manipulated across such a broad spectrum. Workshop attendees expressed the view that building the platform bottom up, including cultural history of sites across the country, would help create the trust that would be needed for it to succeed. Caution would need to be exercised at inception stage in the organisational constitution of any governing body. To this end, an equal split from government, private, third and academic sectors should be sought. The entity must be independent. It must critically analyse and learn from the Threshold 21(T21)¹³ model experience, the National Council for Sustainable Development and to improve and support both; historic governing councils have proven ineffective and inefficient. A direct line of reporting to the Prime Minister would be advantageous.

Mongolia wishes to preserve its rich cultural and ecological history and make government less of a barrier to the private sector. The CEO Club representation and vocal support of TEST was a clear signal from this sector. Mongolia would be able to test standards adopted to ensure economic benefits, such as have been implemented in the construction industry in Abu Dhabi. Much higher building performance standards were introduced and enforced in Abu Dhabi. The outcome is that construction standards have improved, costs have not gone up and performance of buildings is substantially better.

¹¹ The economic situation in Mongolia at present

¹² TBA recently extended its contract of operation in Mongolia by 6 months

¹³ Threshold 21 Millennium Institute model in support of the MDGs

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Economic instability is a pressing risk both at initial financing stage and for longer term security of the project. The ability of TEST to lower risk through the provision of a robust evidence base and thereby improve Mongolia's access to international finance appeared as a driver of the support by the private sector, particularly the Trade and Development Bank sees TEST as one solution to increasing foreign direct investment in "good projects". After initial set-up, the TEST platform must be self-sustaining and any fund ring-fenced to protect it from failing banks. A way to create the funding to maintain the platform is to charge a levy of 1-2% of capital that flows into projects using the platform. In this way the more value that the platform creates, the more money will be available to improve it through local research and development.

Some of Mongolia's most pressing issues are access to and choice of energy, urban sanitation, unemployment and governance. Through the case study research the TEST proposed solutions of geothermal energy, watershed and city systems management including anaerobic digestion and open-access data would directly address these issues and received a good deal of support. TEST would enable retrofitting of this approach through the ability to map resource flows at multiple levels (land use, agent activities, resource flows, and service networks) and show economic benefits for change. There is a growing recognition in Mongolia that using a systems approach is important to develop effective investment in climate adaptation, green sector development, and skills and job creation against the backdrop of increasing resource scarcity and regional-global demographic pressures. The mixed energy use and favourable conditions for renewables (especially geothermal and solar) coupled with largely open access data access and a relatively free press makes Mongolia a good demonstrator region.

However, GIS and other data-based information is currently too complex for interpretative decision-making. It needs to be made integrative to move it from being observatory to "collaboratory" in order to attract PPP and cross-sectoral growth. TEST could be billed as the next progression in modelling tools, integrating the UNEP's PAGE model¹⁴ and ahead of the Post-2015 Sustainable Development Goal agenda. The existing National Council for Sustainable Development might serve as the governing body for TEST and Mongolia can opt to set up a UN SDSN Centre to support taking this forward.

Project planning and implementation is weak, even in the short term exacerbated by a diffuse third sector with weak voice at top-level. Technical capacity at inception stage is low, as is the ability to assimilate and utilize outputs from complex systems models. The TEST model might struggle with a lack of data from secondary industries and issues of data quality. The TEST user interface will be a critical factor in mitigating the latter. A rapid and robust training and education programme would have to support any roll out to 2016.

Significant but not insurmountable barriers remain with regard to financing, capacity in planning, running and maintaining the platform, its independent governance and the access to data in a useable form by the grass-roots population. Given the ambition of the project, TEST may serve in itself as prolonged educational and integrative programme during the 5-year testing phase which would fit well with Mongolia's desire to specialize and grow its IT skills.

Both academic and third sectors considered TEST viable with a significant skew in questionnaire responses (Kruskal-Wallis H test; $K=4.0$, $df=4$, $p=0.028$). Setting policy and practical standards and using the platform as a level playing field for procurement was seen as a strong opportunity; further the

¹⁴ PAGE comes officially to an end in May 2014.

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increased access to data, right to know and social acceptance agendas would support inclusive and equitable development agenda. The independent “collaboratory” would provide a space in which to build collective trust and action. However, whether decisions would actually be based on its outputs was raised as a concern. The question of whether to roll out at national, regional or local level was inconclusive. All levels were seen to have benefits and challenges though a macro-economic lens was used for most discussions and is certainly recommended by the TEST team as a starting point.

To conclude, developing multi-sector stakeholder structures such as TEST which harness the input of the private sector will be critical to developing targeted and effective development policy. Establishing and strengthening forums where the private and third sectors have a formal role to dialogue with government should result in better policy and development outcomes for the people of Mongolia and the preservation of their rich cultural and ecological history.

“Mongolia must engage in ecologically focused solutions to avoid human catastrophe”
(Chuluunbat, Vice Minister, Ministry of Economic Development 20th March 2014)

Next steps and financing

1. Establish independent international team for TEST demonstrator in Mongolia involving key ministries, private sector, third sector and academia.
2. Synchronise TEST, PAGE activities with the Mongolian Green development concept.
3. Secure outcome-based multilateral funding for set up of TEST platform led by the Ministry of Economic Development with contribution from international funders, local private sector funders and the Government of Mongolia.
4. Create long term resilient growth fund using up to 2-5% GDP.

It is estimated that a ball-park sum of \$4m is required to enable the first phase of TEST to be operational by mid-2016 and delivering outcomes. TEST should be placed within an existing framework and not require the establishment of a new policy, agency or legal structure. There are several opportunities:

1. e-Asia Knowledge Fund for ITC – a Finance and Strategy Ministry of Korea grant-funded project through ADB.
2. ADB¹⁵ Regional Technical Assistance programme – requires a minimum of 3 countries which could include Mongolia, China and one more for climate related projects e.g. collection of GIS data.
3. JICA soft loan which could be repaid by a small levy on capital flows attracted by the TEST platform for infrastructure projects
4. TEST local subsidiary in-country company, which would tender for projects direct from ADB through climate finance funds.
5. National GIS Centre funded by GIZ.
6. Contributions could be sought from 3Gi, IFC and the World Bank.
7. The Mongolia PAGE demonstrator is coming to an end but there may be an opportunity to get funding to extend it through demonstrating a Partnership with TEST that could be taken forward globally.
8. Government of Mongolia to ensure commitment – due to current economic conditions in Mongolia¹⁶, the securing of government funds is unlikely to exceed 15% budget.
9. Private Sector funding in support of CSR objectives e.g. Oyu Tolgoi via the CEO Club which has been supportive of TEST since the outset. This could be a grant of say \$20-50K from each of the 20 companies to enable them to access the use of the TEST platform for business development and for access to investment capital

¹⁵ Financing next steps were discussed post workshop with Robert Schoellhammer, Country Director, ADB.

¹⁶ The debt ceiling will shortly be increased from 40% to 60% in March 2014, but allows for no borrowing headroom.

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Annex 1 Scoping mission interviewees

Mission 1

20/01/14

1. Vice Minister Tsogtgerel, Ministry of Industry and Agriculture
2. Independent MP Amarjargal, State parliament
3. Dr Khashchuluun, Professor and CEO of NCPSS, consultant to Mo Econ. Development
4. Coralie Gevers, WB Country Director

21/01/14

5. Vice Minister Chuluunbat, Ministry of Economic Development *
6. Minister Oyun, Ministry of Environment and Green Development – plus Dr Adiyasuren, Dr Khuldorj, & Dr Dagvadorj *
7. Mr Temulin, Economic Development Agency, City of UB *

22/01/14

8. Sezin Sinanoglu, Resident Representative, UNDP
9. Mr Amarsaikhan, CEO of CEO Club *
10. Aza Ulziitogtokh, Principle Banker, EBRD
11. Mr Byambasaikhan, Partner, Nova Terra LLC *

23/01/14

12. Prof Davaadorj, NUM *
13. Jargalsaikhan Dambadarjaa, Economist, Columnist and TV Host, DeFacto *
14. Lambros Karavis, Tony Blair Associates *
15. Mayor Bat-Uul, UB City *
16. Jennifer Butz, Deputy Director N and Central Asia, 3Gi

24/01/14

17. Saurabh Sinha, Senior Economist, UNDP
 18. Mrs Erdenejargal, Executive Director, Open Society Forum
 19. Robert Schollhammer, Country Director, ADB
- * With FCO staff in attendance

Mission 2

20/02/14

CEO Club of Mongolian presentation

20. Amarsaikhan, President and Presidium Member
21. Sainbayar, Executive Coordinator
22. Odendevsambu, Deloitte, Country Manager
23. Battsetseg, CFO, OU Group
24. Lkhamaa Kh, Oyu Tolgoi
25. Gankhuyag Boldbaatar, Digital Agency

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26. Gochoosuren Baigalmaa, Vice Minister, Ministry of Construction and Urban Development and Altangerel Lkhamserjid International Cooperation Division *
27. Ambassador's dinner
 - a. Minister Oyun
 - b. Mayor Bat-Uul Erdene UB
 - c. Amarsaikhan and Sainbayar (from CEO Club)
 - d. Robert Schoelhammer, ADB
 - e. Prof Tuvdiin Dorj, Mongolian Academy of Science
 - f. Sezin Sinanoglu, UNDP
 - g. Vice Minister Chuluunbat
 - h. Vice Minister Tsogtgerel

21/02/14

28. Toshinobu Kato Resident Representative and Atsumu Iwai Senior Representative, JICA
 29. Mr Batkhuyag, UNEP Page programme
 30. Marc Tasse, Resident Director, American Centre for Mongolian Studies
 31. Randolph Koppa, President, Trade and Development Bank
 32. Lambros Karavis and Jhoshan Jothilingham, Tony Blair Associates
- * With FCO staff in attendance

Mission 3

21/03/14

33. Randolph Koppa, President, Trade and Development Bank and Nara Luvsan, Senior Programme Officer, UNEP (PAGE)
34. Michael Walter, Country Coordinator, Integrated Water Resource Management
35. Robert Schoellhammer, Country Director, ADB
36. Ongonsar Purev, Environment Specialist, Mongolia Resident Mission, ADB
37. HMA Stuart, British Embassy

Subsequent meetings between 16th May – 24th May held with:

- Ulaanbaatar Mayor Erdeniin Bat-Üül and Enkhmunkh Temuulin
- Vice Minister Tsogtgerel, Ministry of Agriculture and Industry
- VC Buya tulga, Ministry of Environment and Green Development
- Professor Dorj, Mongolian Academy of Science
- Randolph Koppa, Trade and Development Bank
- Dr Soe Nyunt, WHO
- Enhibaigal, Mongolian Development Institute
- Tumentsogt Tsevegmid, CEO Club
- Urantsooj Gomborusen, Centre for Human Rights and Development
- Bayanjargal Byambasaikhan, Chair, Business Council of Mongolia
- Amarsanaa Baljinnyam, Executive Director of Energy Corporation Ministry of Energy
- Badamdorj Jantsan, Siemens
- Tuyen Nguyen, IFC
- Bulganmurun Tsevegjav, 3Gi
- Robert Schoelhammer, ADB

- Taehyun Lee, WB
- Sezin Sinanoglu, UNDP
- Japanese Ambassador

Annex 2 Supporting expertise

Prof Peter Head, Executive Chairman, Ecological Sequestration Trust

Specialism – Sustainable city-region systems engineering

Former Director Arup and a champion of sustainable development. Civil and structural engineer and recognised world leader in major bridges, advanced composite technology and sustainable development in cities and regions. Visiting Professor in Sustainable Systems Engineering at Bristol University and Eco-cities at Westminster University. OBE, Award of Merit of IABSE, the Royal Academy of Engineering's Silver Medal and the Prince Philip Award for Polymers in the Service of Mankind, Sir Frank Whittle medal of the Royal Academy of Engineering for a lifetime contribution to the well-being of the nation through environmental innovation.

Prof Nilay Shah - Director of the Centre for Process Systems Engineering and Co-Director of the Urban Energy Systems project at Imperial College, London

Specialism – Energy and resource systems modelling and engineering; bioenergy systems and technologies

Co-Director of the Porter Institute for Bioenergy, and leader of the Zero-Carbon Production Systems theme of Climate-KIC. Expert in energy systems modelling and engineering, bio-energy systems, hydrogen infrastructures, supply chain modelling and optimisation, process scheduling and optimisation, design of batch and biochemical processes, and plant safety and risk assessment. He has developed an optimisation-based design methodology for a variety of energy systems exhibiting strong spatial and temporal aspects. Advisor to private sector energy companies on sustainable future economy.

John Liu - Founder Environmental Education Media Project

Specialism - Ecology and Landscape remediation

Influential journalist and producer, author and director of numerous films on a variety of pressing ecological and environmental subjects including biodiversity loss, desertification, climate changes and poverty; restoration in sequestering carbon and returning natural ecological function to lands that have been historically degraded. He is a Rothamsted International Fellow for the Communication of Science, an IUCN Senior Research Fellow and Ambassador for Ecosystem Restoration.

Prof Harald Sverdrup - President of K. A. Rasmussen, Professor at Lund University

Specialism - Production peak fossil resources and ore minerals

Head of Biogeochemistry and Systems Analysis Group and Chemical Engineering - soil chemistry; soil processes modelling, forest and sea ecosystems modelling taking into account the dynamics of the population growth and the dynamics of mercury and phosphorus cycles.

Dr David Taborda, Faculty of Engineering, Department of Civil and Environmental Engineering, Imperial College, London

Specialism – Geotechnics and soil dynamics

A civil and geotechnical engineering research consultant and now lecturer at Imperial. Expertise in numerical modelling of dynamic soil behaviour and liquefaction-related phenomena.

David Rosenberg, Chief Executive Officer, Aerofarms

Specialism - A recognized leader in cleantech and innovation

Co-Founder and Chairman of Hycrete, Inc., (nanotechnology) and former CEO of the McDonough Group (leadership in design, innovation and collaboration). 2010 and 2008 Technology Pioneer and Young Global Leader, World Economic Forum, A member of the Young Presidents Organization and World Economic Forum where he co-chairs their task force on Sustainability and New Business Models.

Dr Clark Fenton, Senior Lecturer, Faculty of Engineering, Department of Civil and Environmental Engineering, Imperial College

Specialism - Terrestrial and marine engineering geology, probabilistic geological and seismic hazard assessment, paleoseismology

Expert in seismic hazards assessment, paleoseismology, engineering geology and structural geology, plus the influence of climate change on the performance of geomaterials, permafrost degradation, impacts of glacio-isostasy. Conducted engineering geologic investigations worldwide in landslide hazards, liquefaction potential, erosion potential, groundwater contamination, and foundation engineering conditions.

Catherine Allinson, Director, Future Earth

Specialism – Sustainable development mediation and facilitation

Adaptation and resilience facilitator and convener of multi-sector stakeholders addressing global climate change impacts and resilience. Climate scientist and independent researcher in international development climate change policy and implementation. Former Programme and Engagement Manager at Overseas Development Institute and Energy Saving Trust.

Olaf Gerlach Hansen, Consultant for innovation and development in cultural programs

Specialism - Intercultural research, culture and development policy issues

Management of artistic, cultural & educational programs, intercultural research and training, and national & multilateral policy making. Senior advisor at the Danish Cultural Institute and Director of the Culture Futures. Member of the International Network of Cultural Diversity (INCD), the World Culture Forum (FCM), President of the International Association for the Study of Dreams and a member of the Danish UNESCO National Culture Committee. Former Director General of the Danish Center for Culture and Development.

Annex 3 Questionnaire

1. Indicate whether this approach works from an ecological perspective? (natural resources and their management, climate variability)				
1. Арга замаа/хандалтаа экологийн талаас нь харуулна уу /үзүүлнэ үү/байгалийн нөөц, түүний менежмент болон уур амьсгалын үзүүлэлт/				
Not at all	Small degree	Moderate degree	High degree	Very high degree
Огт үгүй	Бага зэрэг	Дунд зэрэг	Өндөр	Маш ихээр
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Why? Яагаад?				

2. Indicate this approach work from an economic perspective? (infrastructure, energy, goods and services, individual economic status)				
2. Арга замаа/хандалтаа эдийн засгийн талаас нь харуулна уу/дэд бүтэц, эрчим хүч, бараа болон үйлчилгээ, хувь хүний эдийн засгийн байдал/				
Not at all	Small degree	Moderate degree	High degree	Very high degree
Огт үгүй	Бага зэрэг	Дунд зэрэг	Өндөр	Маш ихээр
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Why? Яагаад?				

3. Indicate whether this approach works from a social perspective? (culture, education, social advance)				
3. Арга замаа/хандалтаа нийгмийн талаас нь харуулна уу/соёл, боловсрол, нийгмийн дэвшил/				
Not at all	Small degree	Moderate degree	High degree	Very high degree
Огт үгүй	Бага зэрэг	Дунд зэрэг	Өндөр	Маш ихээр
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Why? Яагаад?				

Annex 4 List of workshop attendees

Speakers	Role	Organisation
Chris Stuart	HM Ambassador	British Embassy
Oyun, Sanjaasuren	Minister of Environment and Green Development	Ministry of Environment and Green Development
Chuluunbat, Ochirbat	Vice Minister	Ministry of Economic Development
Randolf Koppa	President	Trade and Development Bank
Panel	Role	Organisation
Dr Batdelger Tuvshintugs	Director	Economic Research Institute
Dr Balganjav Khuldorj	Vice President for Research and International Relations	UB Science University
Randolf Koppa	President	Trade and Development Bank
Lkhamaa Khishigt	Stakeholder Superintendent	Oyu Tolgoi
Prof Peter Head	Executive Chairman	The Ecological Sequestration Trust
Attendees	Role	Organisation
Alun Price-Davies	Senior Consultant	Mina
Arshad Sayed	President, Peabody Mongolia and India	Peabody Energy
Augustine Hosch	Senior Project Development Officer, Eco Banking	Xac Bank
Badruun Gardi	Executive Director	Zorig Foundation
Batkhuuyag Choijljav	PAGE Mongolia Country Coordinator	UNEP
Bat-Orshikh Erdenebat	Executive Director	Development Solutions NGO
Bazarsad Chimed-Ochir	Representative	WWF Mongolia
Byambasaikhan D	President of the Mongolian National Recycling Association (Director of Coyote LLC)	Mongolian national association of waste recycling
Catherine Allinson	Director	Future Earth
Dorjpurev J	Director	"EEC" LLC
Dr Khuldorj	Vice President for Research and International Relations	Ulaan Baatar Science University
Enkhtsetseg Tudev	National Economic Development Coordinator	World Vision
Erdenejargal P	Executive Director	Open Society Forum
Ganzorig E	Manager	Mongolian National Recycling Association
Khorolsuren	Programme Administrator	JICA
Michael Walther	Country Coordinator	Integrated Water Resource Management MOMO
Mr Sukhbaatar Ts	CEO	Clean Energy LLC
Ms Bayarmaa Amarjargal	Carbon Finance Specialist	Clean Energy LLC
Naransetseg, Daribazar	The Head, Foreign Relations Department	Sec of State
Naidalaa Badrakh	CEO and Secretary General	Mongolian Bankers Association

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Ochirdavaa Purev		Mongolian Development Bank
Ongonsar P	Environmental specialist	Asian Development Bank
Prof Adiyasuren Ts	Counsellor to the Minister	Ministry of Environment and Green Development
Prof Buyantsogt B	Lecturer	National University of Mongolia
Prof Lodoiravsal Choimaa	School of Engineering & Applied Sciences	National University of Mongolia
Sainbayar, B	Executive Coordinator	CEO Club of Mongolia and NCPSS
Saran Bayaraa	Assistant to Minister Oyun	Ministry of Environment and Green Development
Scott Sudbeck		American Centre for Mongolian Studies
Solongo Ayush	Prosperity Officer	British Embassy, Mongolia
Sumati Luvsandendev	Director	Sant Moral Foundation
Thomas Erikson		UNDP
Thor Danielsson	Head of Delegation of the International federation of Red Cross and Red Crescent Societies Mongolia Delegation	Red Cross Red Crescent
Tserendash S	Local Coordinator	GIZ
Tuul Galzagd	Director of Eco Banking	Xac Bank
Urantsooj	Head of the Centre for human rights and development	Center for human rights and development
Wakisaka	Infrastructure and Development	JICA

Annex 5 Questionnaire transcriptions

From an ecological perspective

1. Mongolian population (in this generation) has experienced the ecological and environmental benefits from the past. It is now most important to remind Mongolia of its ecological tradition and culture.
2. This initiative is in line with other environmental projects e.g. UNEP PAGE in terms of timing and budget.
3. N/a
4. At national level it will not work at all but it is relevant to a very high degree at local level e.g. *aimag* and *som* because at national level the leadership capacity is lacking or there are too many leaders.
5. Decisions should be based on science. Currently it is political, short-term and not always based on science. The problem is that in some cases there is enough knowledge and research but the decisions and implementation is not based on those recommendations. So, how would the new model help to ensure proper decision making and implementation?
6. Ecology is mostly secondary during development planning. Environmentally adverse impact is cared for after it has occurred and damaged. It needs more proactive action.
7. Integrated approaches in different fields are already well-known for many years and we made good experience with high effect implemented and used in the "right" way.
8. Concern: getting resource exploiting companies on board. If it will justify worries regarding prospecting for mining there may be resistance to its use. Resources are still considered the main saving grace of Mongolia in popular mind. Can see no reason why it can't feasibly produce accurate ecological info. Fish farming would be ok. 10 years ago no Mongolians ate eggs – local company "created" demand.
9. The process of integrated modelling of the component parts of ecology itself will take a long time. Nonetheless, it would be a very productive work if planned and implemented in the right way.
10. It will make it possible to decide on a policy and decision making level. It [will be] possible to include climate variability. Natural resources management is doubtful.
11. Present lag in our development provides an opportunity (advantage) to move to the new level of ecological development.
12. It works because it is not only an information gathering process. Transparency would be improved. The implementation of TEST is not clear. Human capacity is an issue. UNEP and PAGE are environmental projects.
13. Rapid development and the mining sector are affecting the nature and lives of the local people negatively in many ways. Therefore, everyone is paying attention to the protection of the environment and the legal environment is also improving. So this approach will give an opportunity to develop very important structure and mechanisms.
14. N/a
15. I see it as an advancing model using the principles of increasing the volume of non-mineral natural resources. This will provide us with an opportunity to protect air and water, which are the basic human needs and also to protect animals and wildlife. By doing so, we will be able to use these for enhancing our quality of health, business and social life.

From an economic perspective

1. Economic education of the population is at a moderate level. It is important to re-educate the politicians and public servants in green economy and modern concepts of development.
2. It will foster Mongolia's public sector planning execution and monitoring capacity (Planning Bill is pending); Mongolia's public sector lacks macro modelling capacity (T21 by the Millennium Institute is build built up); The approach coincides with Ecological and Social Accounting which is at infant stage in Mongolia; Mongolia stands ahead of major infrastructure projects (rail network, highways, power plants); sectoral policy coordination remains very weak.

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3. N/a
4. At national level it will not work at all but it is relevant to a very high degree at local level e.g. aimag and som because at national level the leadership capacity is lacking or there are too many leaders.
5. TEST should consider the cost-benefit of using such a model versus implementation and whether the decision will actually be based on this model, even if implemented and whether all the cost and effort and time for any model is worth the resource for actual implementation.
6. Internationally good practice and experience, laws and standards are not implemented. It is vitally important.
7. N/a
8. Infrastructure/energy data can be very incomplete, especially when looking at independent (not grid connected) use, i.e. vehicles, diesel generator use, stove use. Much income/trade is also in the "informal market" meaning in ger districts, rural areas etc. Economic exchange decisions and info will require extensive research to approximate. Many biometrics are not terribly transparent.
9. Modelling from an economic perspective looks correct. Increasing the coherence between sectors will provide an opportunity to have an accurate plan and expect an effective economic outcome.
10. Will attract an interest if the private sector can estimate its investment. Modelling methodology is interesting and possible for researchers
11. Cost (investment) of infrastructure development for the sparse and small number of population is high.
12. TEST would provide some political continuity as there is no general planning for development. It makes the picture clearer and gives options for high-tech and the government of Mongolia.
13. Mongolian people expect the private sector and investors to be responsible. The legal environment is moving to this direction as well. Therefore, business initiatives would be interested in using this system.
14. More capital will be required compared to the present situation, i.e., it cannot be economically more beneficial. However, we need to think about tomorrow and the future rather than about today when it comes to developing [the country].
15. From an economic perspective, it is very important to invest in order to have an ecological balance. Investing is extremely vital, as return on investment will always guarantee economic growth. One needs to keep the private sector and citizens informed on the economic benefits. Moreover, this will help to include the additional parameters of ecological protection in the business model.

From a social perspective

1. Mongolian education and health levels are still high. Sustainable development concepts from the last two decades are supporting resilient development and lending in Mongolia.
2. Social sector stakeholders (civil society, NGO) remain weak and underfunded; institutional framework is still lacking; GDP growth is still prioritized over socially inclusive development; Mongolia's social environment is not quite mature enough to adopt such an advanced systems approach.
3. N/a
4. At national level it will not work at all but it is relevant to a very high degree at local level e.g. aimag and som because at national level the leadership capacity is lacking or there are too many leaders.
5. Mongolians may change their minds or plans later on (may not follow or stick to the plans). Policies, strategies and regulations tend to change at each political election.
6. Public debates and discussions are many but actions are mostly weak.
7. Capacity development with a multi-level approach is already put into practice in Mongolia with great success. However, too little impact by Mongolian political decision-makers.
8. Mongolians seem to be open to new ideas, particularly once proven. Some topics are considered "rude" e.g. asking about education levels. Don't see this as a major hurdle though. Culturally very entrepreneurial.

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9. It is important to engage in broader public debate.
10. Allow public involvement and provide transparency. Human capacity [is] important!!!!
11. Resources for future generations. Competent personnel are poor due to the low quality basic education (no stable primary and secondary education [at present]).
12. Social cohesion would be promoted, civil participation better. Just the modelling is important but the institution is not addressed.
13. Involvement of the multiple players in the process of developing, implementing and assessing of the development programme has become a vital issue. Therefore, I think that this system will help in this field.
14. We need to train people in a proper sense. It is not possible to implement this without training them and letting them to understand an importance of the issue. Outcome in terms of ecology will very much depend on how effectively the training is organised.
15. [I] am sure that this approach will help to create a work culture in this field in Mongolia. Everyone's contribution to the sustainable development will be recognized if [we] maintain the tradition of explaining this in the continuity policy.

Author: Catherine Allinson, Independent Consultant, Future Earth Limited, on behalf of The Ecological Sequestration Trust www.ecosequestrust.org March 2014.

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