POLICY BRIEF

November 2014
Number 30

Designing and Implementing an Energy Goal: Delivering Multi-benefits for Sustainable Development

Tetsuro Yoshida
Task Manager & Senior Policy Researcher, Integrated Policies for Sustainable Societies, IGES
t-yoshida@iges.or.jp

Eric Zusman
Leader & Principal Policy Researcher, Integrated Policies for Sustainable Societies, IGES
zusman@iges.or.jp

[Contributors]
Noriko Shimizu
Policy Researcher, Climate and Energy, IGES
Ikuho Miyazawa
Policy Researcher, Integrated Policies for Sustainable Societies, IGES

Main Messages

- A sustainable development goal (SDG) for energy should provide an ambitious, long term vision beyond 2030 (such as 100% renewable energy share or zero fossil fuel and nuclear energy) and serve as an inspiring reference for national level target-setting.
- Different countries confront different challenges; development levels, resource wealth and many other factors influence priorities placed on energy. National energy targets and action plans aligned with global goals are needed for each country.
- The energy SDG should include targets that address key challenges: 1) energy access; 2) energy efficiency; 3) share of renewable energy; 4) reduction in energy consumption.
- Successful energy policies such as the feed in tariff (FIT) and removal of fossil fuel subsidies need to be adopted as enabling targets for the energy SDG.
- The SDG needs to identify how to mobilise sufficient investment in renewable energy so as to reverse the heavy bias towards fossil fuel and nuclear energy.
- Limiting the global temperature rise (since the pre-industrial era) to 2 degrees Celsius will require rapid boosts in renewable energy share and energy efficiency, as well as reduced energy consumption–especially in wealthy countries. Targets reflecting the need for lifestyle changes to curb wasteful consumption should be included in national follow-up processes.

I Introduction

Since the Rio+20 meetings in 2012, policymakers and experts have engaged in nearly two years of discussion on Sustainable Development Goals (SDGs). This dialogue is expected to culminate in September 2015 with a post-2015 development agenda that will help frame how stakeholders can pursue development for the years ahead. The purpose of this policy brief is to provide recommendations on the design and implementation of a central component of the post-2015 development agenda: an SDG for energy.

The policy brief suggests an energy SDG should be designed to offer an ambitious, long-term vision that serves as an inspiring point of reference for countries to set their own national energy targets and action plans. Such targets and actions will therefore need to be tailored to national circumstances, thus the energy SDG should prompt countries to take on four key challenges: 1) energy access; 2) energy efficiency; 3) share of renewable energy; and 4) reduction in energy consumption. To strengthen SDG implementation, this policy brief further recommends the inclusion of enabling targets for policies such as feed-in-tariffs (FITs) as well as other measures that encouraging the redirection of resources from fossil fuels to renewables and energy efficiency. Last but not least, the policy brief maintains that to avoid exceeding the 2 degree rise (over pre-industrial revolution levels) national follow-up processes should also introduce targets to reduce energy consumption—especially in high income countries.

The remainder of the policy brief is divided into seven sections. The next section sets the context by highlighting the centrality of energy to development and the importance of tailoring an energy goal to varying national contexts. The third section comments on how energy is treated in the most recent outcome document of the Open Working Group (OWG), which was created to engage countries in the design of SDGs. The fourth section focuses on a common set of challenges that an energy goal and national actions will need to confront. The fifth and sixth sections address the localisation and means of implementing an energy SDG, respectively. The final section concludes by reiterating key messages and reflecting on the way forward.

2 Setting the Context: Energy is Central to Development

Most energy generating activities place strains on local and even global ecosystems. At the same time, access to reliable forms of energy is critical to development. The indispensability of ensuring access to modern energy as part of poverty eradication is widely acknowledged [The Secretary-General's High-Level Group on Sustainable Energy for All 2012]. It is further recognised that access to energy enables social and economic development, offering the opportunity for improved livelihoods and economic progress [United Nations Foundation 2013]. Energy access is a precondition for human development; indeed no country in modern times has substantially reduced poverty without a sizable increase in energy services [UNEP, WHO 2009]. Further, access to clean and affordable energy can deliver benefits ranging from longer study times for children to prevention of 800,000 premature child deaths due to exposure to indoor smoke [The Secretary-General's High-Level Group on Sustainable Energy for All 2012].

While energy itself has traditionally been a highly contentious issue, in light of the above, it is easy to see why an energy goal enjoyed such widespread support at Rio+20 [Rio+20 UN Conference on Sustainable Development 2012].

The fact that the energy sector represents the largest share of global GHG emissions (41%) [International Energy Agenda 2012] makes this issue one of global and critical importance, and it requires the cooperation of all countries.

Sustainable Energy for All (SE4All) is a global initiative launched by the UN Secretary General and a number of countries have agreed to partner with it.

It is based on the Year of Sustainable Energy for All, as designated by the UN General Assembly and is a voluntary initiative; member states have not officially endorsed it as a global energy goal. To date there have been no official globally agreed goals or legal instruments on energy access, energy efficiency and the share of renewable energy. Having global goals would clarify what action is needed, mobilise resources and rally efforts, thus introducing global goals is of critical importance.

While there is general agreement that energy should be integrated into the post-2015 development agenda [Sustainable Development Solutions Network 2013; The Secretary-General's High-Level Group on Sustainable Energy for All 2012], it is quite a challenge to define *universal* SDGs for energy that will be relevant and useful to all countries. The world is diverse, countries confront varying challenges, and priorities differ depending on development levels, resource wealth and a host of other factors. Figure 1 depicts the high-impact countries playing a large role in global performance in terms of electricity access deficit, non-solid access deficit, and primary energy demand, as identified by the World Bank.

The key is to design a set of global goals that would serve as useful points of reference and inspiration, that could also be easily adopted by countries according to their national contexts, and which would motivate high impact countries such as China and the U.S. to take action. As mentioned above, the core issue concerning sustainable development is energy, and achieving the four energy goals of *access, efficiency, renewable energy and lifestyle change leading to energy conservation* could help achieve sustainable development.

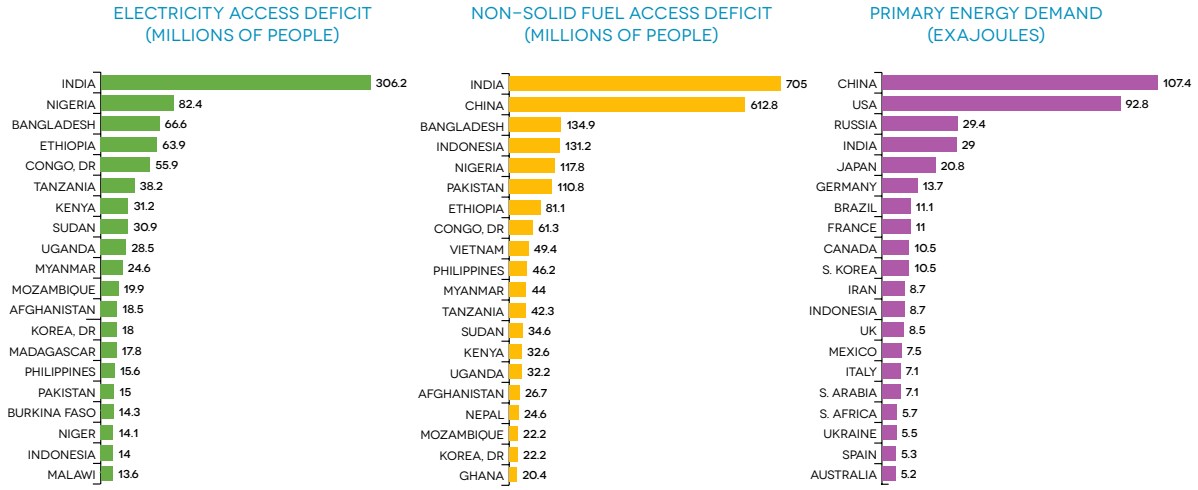
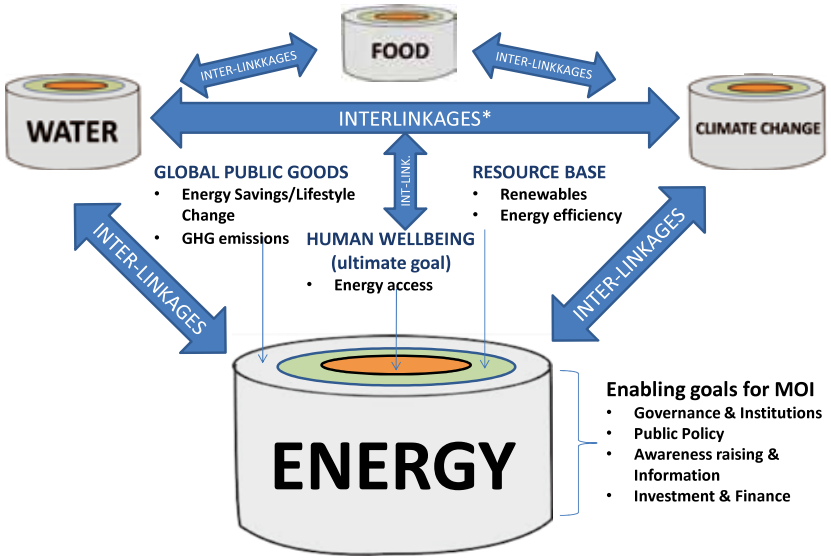


Figure 1 Overview of High Impact Countries, 2010 (Source: World Bank 2013)

3 The Latest OWG Goals on Energy

The current SDG proposals (see box 1 below) on energy share much common ground with the Secretary General's Energy for All objectives, which comprise three goals— energy access, energy efficiency and share of renewable energy—with the exception that the former attaches no specific figure to the share of renewable energy due to worldwide variations (e.g., Iceland and Paraguay have already achieved 100% whereas like Libya has zero reliance on renewable energy). It is therefore important to present a long-term vision to the whole world, such as 'Achieve 100% renewable energy share in the global energy mix by 20xx', to spur countries which have already achieved the targets to be even more ambitious. A number of countries have already set domestic targets on energy efficiency and renewable energy and are working towards them in the absence of SDGs, thus SDGs need to be value-added, more ambitious and 'stretching' than their existing targets.



* This diagram is only indicative and there are a number of other inter-linkages with energy.

Figure 2 SDG framework: three tiers of ultimate goals and four layers of enabling goals for MOI

The targets of goal 7 for the OWG on the means of implementation (7.a, 7.b) focus on knowledge, technology, infrastructure and finance, which are all important but lack the elements of public policy and institutions and governance, which have also been identified as enablers for the implementation of SDGs (see the above figure and through a study conducted by Nilsson et al., 2013). Energy policies which have proven effective, such as feed-in tariffs and removal of fossil fuel subsidies need to be incorporated as energy targets as they serve as strong enablers for other targets.

Effective institutions and policies as well as good governance are the cornerstones of sustainable development, especially in ensuring efficient use of financial resources and to unlock additional resources for sustainable development [Intergovernmental Committee of Experts on Sustainable Development Financing, 2014]. In particular, energy-related issues are typically handled by several government ministries and departments so coordination will also be key for effective implementation. These elements may be better covered by other goals or targets—good governance, for example—as these issues have weight and carry over in all other sectors. The importance of effective institutions and good governance, however, also need to be recognised as indispensable when striving to achieve energy targets.

Box 1 Goal 7. Ensure Access to Affordable, Reliable, Sustainable, and Modern Energy for All (from the OWG latest draft)

7.1 By 2030 ensure universal access to affordable, reliable, and modern energy services
7.2 Increase substantially the share of renewable energy in the global energy mix by 2030
7.3 Double the global rate of improvement in energy efficiency by 2030
7.a By 2030 enhance international cooperation to facilitate access to clean energy research and technologies, including renewable energy, energy efficiency, and advanced and cleaner fossil fuel technologies, and promote investment in energy infrastructure and clean energy technologies
7.b By 2030 expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, particularly LDCs and SIDS

Box 2 Sustainable Energy for All[1]

- Ensuring universal access to modern energy services
- Doubling the global rate of improvement in energy efficiency
- Doubling the share of renewable energy in the global energy mix

4 Proposed Goal and Related Issues

4.1. Universal Energy Access

There is a correlation between the lack of modern energy access and underdevelopment, thus developing countries which have not achieved universal modern energy access need to prioritise energy access in order to improve human wellbeing. As can be seen from figure 1, the electricity access deficit and non-solid fuel (e.g., LPG, kerosene) access deficit are predominantly issues of lower income developing countries.

As it is still unrealistic for developing countries to achieve universal access to energy by 2030 via clean energy without significant external financial and technical support, 2030 is likely to be the target year for the SDGs and Post 2015 Development Agenda. The high costs of renewable energy present a challenge for developing countries (and developed countries) and only a few countries in the world with exceptional natural endowments have managed to provide 100% of their electricity from renewable energy (e.g., Iceland, Paraguay).

This makes it evident that in many places, especially low income countries, energy access would still need to be ensured via conventional energy sources. Enabling leapfrogging in developing countries would require substantial financial and technical cooperation from developed countries, other developing countries and other stakeholders such as companies and international organisations.

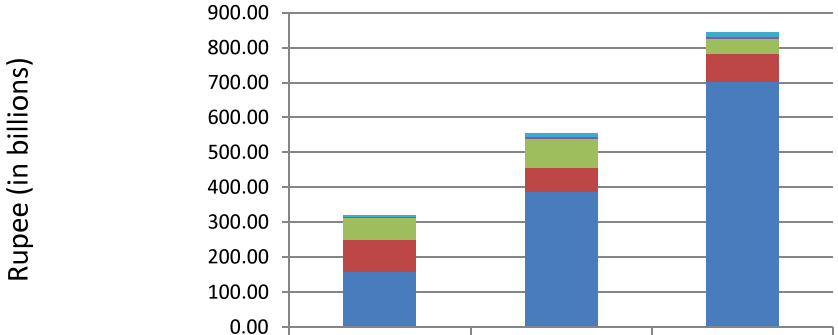
Box 3 India and Its Expenditure on Renewable Energy

As indicated in figure 1, India is one of the key countries which will decide the future of global sustainability. Placing second in world population and eighth in GDP (2010), it has become one of the largest emerging countries. Despite it placing 100 in per-capita CO_2 emissions (of all countries, 2010), it is currently the third largest CO_2 emitter and it was the fifth largest emitter over 1990–2010; thus promoting renewable energy while concurrently improving energy efficiency in India will play a significant role in achieving sustainable development.

In India, the trade-off between increasing access to modern energy services and increasing share of renewable energy is conspicuous. The budget allocated for renewable energy has been far outpaced by that of fossil fuel energy, as shown in figure 3, despite the fact that the renewable energy budget doubled over the past three years. Compounding the problem of energy access are the close links to food and water security. Policies related to these issues thus must be integrated at design and implementation stages to avoid serious trade-offs.

India still struggles with energy poverty and underallocates domestic resources and ODA to renewable energy deployment while overprioritising energy access from fossil fuel energy, despite the multiple benefits of renewables for sustainable development. The case of India highlights the critical need for donors to increase financial assistance in order to bring about leapfrogging and for the country to redirect its domestic financial resources. SDGs and the Post 2015 Development Agenda could play an important role in redirecting and accelerating the financial flows of donors in this regard.

[1] [The Secretary-General's High-Level Group on Sustainable Energy for All, 2012]



Ministry/ Department	2009-2010	2010-2011	2011-2012
New and Renewable Energy	5.51	9.86	11.97
Coal	2.80	4.24	3.73
Power	62.95	82.51	43.16
Atomic Energy	89.01	71.28	83.04
Petroleum and Natural Gas	159.66	385.37	701.00

Source: (Yoshida, Olsen, Miyazawa, *et al.*, 2015)

Figure 3 Trends in expenditure by Indian energy sector ministry or department

4.2. Energy Efficiency

Since global energy demand is estimated to grow by 33% from 2010 to 2035, energy efficiency improvements will become increasingly important. An efficiency goal is particularly important for emerging countries, which often have large-scale but inefficient industrial and utility sectors. There is usually ample room for efficiency improvements, such as via building retrofits and upgraded appliances, and energy efficiency investments have many positive spillovers: they often pay for themselves, enhance energy security, are relatively easy to implement, and are worth implementing immediately.

The potential for improvements in energy efficiency has been recognised by the Chinese government, as illustrated by its inclusion of “green measures” in the 12th Five-Year Plan. The plan includes a 16% reduction in energy intensity target (energy consumption per unit of GDP), a 17% reduction in carbon intensity reduction target (carbon emissions per unit of GDP), and a non-fossil energy target of 11.4% of total energy use [Lewis 2011]. Access to electricity as such is not an issue in China as it is almost universal, but the quality of energy provision remains a problem as 29% of the population relies on traditional biomass for cooking [International Energy Agency 2010]. China also demonstrates a different focus from that of other lower income developing countries, which tend to centre on access issues, and developed countries, which tend to concentrate, *inter alia*, on lifestyle change, renewable energy and energy conservation.

4.3. Renewable Energy

The importance of increasing the global share of renewable energy is now widely accepted—it would offer climate change mitigation, improved air quality and increased energy security benefits. Since fossil fuels are being rapidly depleted and the nuclear option entails risks and radioactive waste, renewable energy is the only truly sustainable form of power generation. The growing popularity of renewable is reflected by the adoption by 138 countries of policy targets for increased deployment of renewable energy and the adoption by 127 countries of renewable energy support policies—more than two-thirds of which are developing countries or emerging economies [REN 21 Secretariat 2013]. The question is whether a new set of global goals would be able to provide impetus to these existing national policy targets and policies and lead to implementation.

The current global share of renewable energy in final energy consumption is still low—estimated at 16.7% [REN 21 2012]—but while goals related to renewable energy can be applied to developing countries they cannot be applied evenly throughout the world due to

differences in renewable energy potential. Countries such as Iceland and Paraguay have already achieved renewable electricity shares of 100% [REN 21 2012] due to the abundance of geothermal and hydro power; many other countries do not have this luxury.

The costs of raising the renewable proportion depend greatly on the potential of renewable energy. A target of 20% renewable share of electricity, for example, is too ambitious for some countries but easily achievable for or already achieved by others, and while the renewable energy goal 'Sustainable Energy for All; doubling the share of renewable energy in the global energy mix' may be appropriate at the global level (suggesting a global share of renewable energy of around 32–36% by the year 2030) it may not be the best starting point for some countries. For countries already with relatively high renewable energy shares, doubling them may be too ambitious; conversely, doubling the share of renewable energy for countries with low shares (e.g., 1%) may be too simple and have no real effect.

Therefore, appropriate ambitious targets should be set based on a bottom-up approach at local and national levels. At the same time, local circumstances should be accounted for to maintain ownership and relevance while a global goal set under a long-term vision shared by the international community (e.g., zero fossil fuels, zero nuclear energy) should encourage efforts of multiple stakeholders at multiple levels to raise additional finance, for example. The translation of these global goals at the national level with adjustments made using the bottom-up approach at the country level is critical for goals to be implemented, as implementation requires both strong governments and local innovation.

4.4. Energy Savings and Lifestyle Change

In order to stay within safe global climate limits, populations with high per-capita energy use need to greatly reduce their emissions. The threshold of atmospheric carbon dioxide (CO_2) concentration proposed by Rockström and others as one of the planetary boundaries will soon or has already been exceeded (depending on whether one uses a 350 or 550 ppm boundary) [Rockström, 2009].

Despite improvements in energy efficiency over the past two decades, resulting in a cumulative drop in global energy demand of over 25% (1990–2010) and expanded renewable energy supply (cumulative total exceeding 1,000 exajoules globally over same period), such gains were diluted by rapidly growing populations and economies [World Bank 2013]. In other words, global progress in energy efficiency and renewable energy share have been outpaced by growth in total energy consumption, which is estimated to increase rapidly in parallel with rising global populations and economies.

Neither energy efficiency nor renewable energy measures alone can cap global warming to within 2 degrees Celsius by 2030, according to Global Energy Assessment by the Institute for Applied Systems Analysis (IIASA) estimates [Rojelj, 2013]. However, the probability of limiting global warming to 2 degrees shoots up to 66–90% if the Sustainable Energy for All (SE4ALL) objectives for renewable energy and energy efficiency are simultaneously met [World Bank 2013]. This means that even if the world could achieve all three SE4ALL goals, a challenge in itself (few scenarios point to renewable energy shares above 30% by 2030 [World Bank 2013]), it is still unlikely for the 2 degree target for climate change to be achieved.

Energy saving is a common feature of energy policy in developed countries, a number of which already have energy saving targets. Several EU countries have set national targets for energy saving and adopted trading of 'white certificates' or 'energy savings certificates', which demonstrates that a certain reduction in energy consumption has been attained to meet required energy saving targets [European Commission 2009]. Goals related to energy efficiency can provide synergy with energy saving, as energy saving targets provide a greater incentive to improve energy efficiency. On the flipside is a scenario that ignores energy saving, in which bulk energy demand overshadows any progress in energy efficiency and renewable energy deployment.

5 Localising Energy Goals

To make the global goals relevant and useful in national contexts, it is necessary to localise them based on national realities and priorities; each country needs to set its own national goals and targets in line with global targets, as energy environments universally differ in nature. National governments are usually the bodies most informed of national situations and they have a key and critical role in steering energy policy and setting the enabling conditions for various stakeholders to effectively participate in this joint endeavour. The diversity of issues facing different countries as well as the challenges likely to emerge can be foreseen through studying the issues linked with the goals stated in the SDG Open Working Group's outcome document. SDGs, targets and indicators which are to be set in the near future need to highlight critical issues for governments to consider when they set their own domestic goals, targets and indicators.

6 Means of Implementation (MOI) and Governance

Policymakers also need to carefully consider means of implementation and governance reforms, with the aim of achieving the four goals highlighted throughout the policy brief. Identifying critical MOI involves keeping abreast of international discussions and actual cases at the local level. Based on energy access and renewable energy case study research and the framework used in the afore-mentioned study by Nilsson et al., the following points were identified by the authors as important considerations for success to fully implement an energy SDG.

Institutions & Governance - hybrid models of top-down and bottom-up governance

National governments need to provide enabling conditions (e.g., feed in tariff law/policy, infrastructure such as local grids, renewable energy subsidies) where multi-stakeholders such as local governments, businesses, and individual citizens could take initiatives and participate in the market to achieve the transformation to sustainable energy. Clear, reliable and consistent policy over the long term is needed to attract the necessary investments.

Governance targets, such as the rule of law, effective institutions and reduction in corruption are also needed (which may be better placed under other goals), along with clear, coherent energy policies. These are the cornerstones of sustainable development, and as such represent enabling conditions paving the way for further investment. To reduce energy consumption, especially in high-income countries, targets reflecting the need for lifestyle changes should be included in national follow-up processes.

Capacity & Knowledge - awareness raising and information sharing

Where traditions and customs influence behaviour such as in the use of conventional energy, the public's understanding of new ways of doing things as well as the benefits thereof may be limited—which can result in indifference or even resistance to change. A case in point concerns the resistance, in many parts of Asia, to the introduction of clean cooking stoves and renewable energy home energy systems due to centuries-old tradition and customs related to fossil fuel usage. Such attitudes cannot be changed overnight, thus awareness-raising is critical for fundamental transformation in the energy sector.

Capacity & Knowledge – the role of international and regional organisations

While there are already many international actors promoting renewable energy, there is still room for improvement for international and regional organisations in providing reliable, authoritative data, and high quality intellectual advisory assistance for member countries. The availability of standardised, reliable data on critical issues such as electricity prices and renewable energy potential is still scant in developing countries. Further, governments in

developing countries are often unsure of which renewable options to choose and tend to replicate technologies promoted elsewhere by donors like the World Bank despite differing implementing contexts and conditions. International organisations with expertise in energy efficiency and renewable energy could assist developing countries by helping them choose appropriate renewable technologies, sharing information on good practices and the latest renewable technologies (e.g., via expert and practitioner workshops), compiling and sharing essential data on websites, and providing technical and policy advice.

Interlinkages between Energy and Other Goal Areas

As mentioned above, there are a number of positive interlinkages between energy and other goal areas such as education, health and climate change mitigation, but there are also possible trade-offs with energy, e.g., the 'overdraft' of water by water pumping and the competing use of water for drinking, agriculture and energy generation. As the largest single consumer of water, agriculture competes directly with the energy sector for water resources [U.S. Department of Energy, 2014] and this is a particular concern in many parts of the world short of water [Bhattacharya & Mitra, 2013]. Many of these places would benefit directly from renewable energy generation such as solar PV and wind since no water is involved, unlike the large quantities required for fossil fuel and nuclear energy generation. It may not be possible to address all interlinkages since targets and indicators need to be simple to be effective, but it may be necessary to include them within the SDG framework.

7 Conclusion

As shown in the case of renewable energy, the needs and priorities of countries differ depending on the level of development and other factors, and it is more effective for different groups of countries to set their own national goals. Hence, universal goals could have specific context-appropriate targets and indicators (e.g., on access, efficiency, renewable energy and energy savings) but some indicators may be more relevant for some countries than others. Thus, targets and indicators could be utilised selectively as points of reference so that countries can develop their own goals and targets in a bottom-up manner.

In this connection and without losing sight of the overall direction, an SDG for energy should embody an ambitious, long term vision (e.g., 100% renewable energy share or a world free from fossil fuel and nuclear energy by the end of century) based on what kind of world we would like to live in and what kind of energy system could bring this to fruition. In this regard it will be increasingly important to suggest framing the energy goal around the four areas described herein: 1) energy access; 2) energy efficiency; 3) share of renewable energy; 4) reduction in energy consumption.

To make progress in these four areas, a means of implementation will be required—and in this context SDGs need to underscore the importance of mobilising sufficient investments in energy efficiency and renewable energy. One of the simplest ways to do this is for countries to enact policies that steadily shift financing for fossil-fuel subsidies to energy efficiency and renewables. This simple—albeit politically challenging—shift could dramatically alter the global energy landscape if it was taken at scale by major energy users across the world.

There is little doubt that establishing a set of universally applicable goals will be no easy task, both in terms of politics and feasibility. At the WSSD Johannesburg Summit in 2002, the EU and Brazil suggested adopting concrete renewable energy targets, but met opposition from G77 and OPEC on the grounds that access to energy for the poor should take priority [Ohga 2012]. Thus, going forward, it will be important for the next set of universal goals to provide a long term vision, buttressed by model targets and indicators for selective use at regional, national, local and even community levels.

• References

Bertoldi, P. and Rezessy, S. (2009) Energy Saving Obligations and Tradable White Certificates. European Commission.

Bhattacharya, A. & Mitra, B.K. (2013) Water Availability for Sustainable Energy Policy: Assessing cases in South and South East Asia. IGES Policy Report. December.

International Energy Agency (2010) World Energy Outlook. Paris, France, International Energy Agency. Report number: ISBN: 978 92 64 08624 1.

Lewis, Joanna (2011) Energy and Climate Goals of China's 12th Five-Year Plan. Pew Center.

Manning, R. (2010) The Impact and Design of the MDGs: Some Reflections. IDS Bulletin. [Online] 41 (1), 7–14. Available from: doi:10.1111/j.1759-5436.2010.00098.x [Accessed: 15 October 2014].

Mcginn, D., Green, D., Hinrichs-rahlwes, R., Sawyer, S., et al. (2013) Renewables 2013 Global Status Report 2013. Ren21. Report number: ISBN 978-3-9815934-0-2.

Moss, T. (2010) What Next for the Millennium Development Goals? Global Policy. [Online] 1 (2), 218–220. Available from: doi:10.1111/j.1758-5899.2010.00024.x [Accessed: 15 October 2014].

Nilsson, M., Yoshida, T., and Lucas, P. (2013) Towards an Integrated Framework for SDGs: Ultimate and Enabling Goals for the Case of Energy. Sustainability. [Online] 5(10), 4124-4151. Available from: doi:10.3390/su5104124 [Accessed: 15 October 2014].

Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F. S., Lambin, E., Foley, J. (2009) Planetary boundaries: Exploring the safe operating space for humanity. Ecology and Society, 14(2).

The Secretary-General's High-Level Group on Sustainable Energy for All (2012) Sustainable Energy for All - A Global Action Agenda. New York, United States, United Nations.

U.S. Department of Energy (2014) The Water-Energy Nexus: Challenges and Opportunities. [Online] Available from: http://energy.gov/sites/prod/files/2014/07/f17/Water Energy Nexus Full Report July 2014.pdf [Accessed: 16 October 2014].

U.S. Department of Energy (2014) The Water-Energy Nexus: Challenges and Opportunities. [Online] Available from: http://energy.gov/sites/prod/files/2014/07/f17/Water Energy Nexus Full Report July 2014.pdf [Accessed: 16 October 2014].

UN General Assembly (2011) Preparatory Committee for UN Conference on Sustainable Development. New York, United States, United Nations.

UNDESA (n.d.) Open Working Group: Sustainable Development Knowledge Platform. [Online]. Available from: http://sustainabledevelopment.un.org/owg.html [Accessed: 30 October 2014].

UNDP (2011) Human Development Report 2011. New York, United States, UNDP.

UNEP, WHO (2009) The Energy Access Situation in Developing Countries. Geneva, Switzerland, UNEP, WHO.

United Nations (2012) Millennium Development Goals Report. New York, United States, United Nations.

United Nations (2012) The future we want. Rio de Janeiro, Brazil, United Nations.

United Nations (2014) Report of the Intergovernmental Committee of Experts on Sustainable Development Financing. New York, United States, United Nations.

United Nations Foundation (2013) Sustainable Energy for All. [Online] Available from: http://www.sustainableenergyforall.org/objectives/universal-access [Accessed: 15 January 2013].

Vandemoortele, J. (2015) The MDG Conundrum: Meeting the Targets Without Missing the Point. Development Policy Review. 27 (4), 355–371.

Vandemoortele, J. and Delamonica, E. (2010) Taking the MDGs Beyond 2015: Hasten Slowly, IDS Bulletin 41 (1): 60-69.

World Bank (2014) CO_2 emissions (metric tons per capita) | Data | Table. [Online]. Available from: http://data.worldbank.org/indicator/EN.ATM.CO2E.PC [Accessed: 15 October 2014].

WWF (2011) The energy report. WWF. Report Number: ISBN 978-2-940443-26-0.

Yoshida, T., Olsen, S., Miyazawa, I., Shimizu, N., Chiba, Y. (2013) Governance for Sustainable Development Goals (SDGs) – Views from Asia. IGES ISAP discussion paper, 1–17.

Yoshida, T., Olsen, S.H., Miyazawa, I., Shimizu, N., et al. (2015) Governance for Sustainable Development Goals (SDGs) – Views from Asia. 1–17.

• Acknowledgements

The author is grateful to Magnus BENGTSSON, Mark ELDER, Hidefumi IMURA and Simon HOIBERG OLSEN for their suggestions and reviews of this paper at various stages. This paper has also benefitted from several rounds of discussions inside IGES, including the SDG Retreat organised by IGES in August 2014. This research acknowledges support from the "Project on Sustainability Transformation 2015" (S-11-4) from the Environment Research and Technology Development Fund of the Ministry of Environment, Japan.

Institute for Global Environmental Strategies

2108-11 Kamiyamaguchi, Hayama, Kanagawa, 240-0115 Japan
TEL : +81-(0)46-855-3700 FAX : +81-(0)46-855-3709 E-mail: iges@iges.or.jp http://www.iges.or.jp