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Sustainable Development Goal Number 7: How to Set Appropriate Targets, Organise an Appropriate Monitoring, and Reach Universal Access to Energy

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Highlights¹

- In September 2015 the United Nations Assembly established an Agenda 2030 made of 17 Sustainable Development Goals to fight poverty and promote human development.
- SDG number 7 recites: “Ensure access to affordable, reliable, sustainable and modern energy for all”. For SDG 7, as well as for the other SDGs, a system of targets and indicators has been set, to allow monitoring the steps toward the goals.
- There is one main unsolved problem with Goal 7, and with other Goals. Responsibility for progress has been set at the country level, and monitoring is mainly national. The most difficult task lies in low-income countries, where governments do not have sufficient resources to reach the goals by themselves, and even monitoring is weak.
- International cooperation is included in the system of targets and indicators, yet mostly in qualitative terms; official development aid is the main variable, directly related to the Goal, that can be measured and for which responsibility is assigned.
- We know from reliable sources that Goal number 7 is not being met and that it is highly likely that the problem will remain beyond the year 2030.
- A special effort is required. Monitored action should be much broader than official aid. As in the case of climate policies, targets cannot be imposed on independent states and, were they set, no credible system of sanctions would make them mandatory.
- New ways to pursue the Goal must be found. A possible solution lies in a set of voluntary commitments plus transparency and reporting obligations, similar to the one introduced in the Paris COP 21 for climate policy. It could allow inclusion of the private sector, partner in the Global Compact, into a joint responsibility mechanism.

1. This Policy Brief is based on research work performed within the project ‘World Access to Modern Energy (WAME)’ initiated as a complementary initiative to the Milan EXPO 2015 and presently based on the Florence School of Regulation, the Fondazione AEM (Milan) and the Fondazione Museo Nazionale della Scienza e Tecnologia Leonardo da Vinci (Milan), with financial support by Fondazione CARIPLO.



The Sustainable Development Goal n.7 and its Three Issues

A contemporary worldwide effort to ensure better living conditions is represented by the UN-approved Agenda 2030, consisting in 17 Sustainable Development Goals (SDGs). Among these, SDG number 7 recites:

Goal 7:
Ensure access to affordable, reliable, sustainable and modern energy for all.



Following the wording introduced by the International Energy Agency, “modern” designates the types of energy that are essential to contemporary life, hence electricity primarily, and also a combination of stove and fuel that allows cooking food without danger to health and the environment.

This Goal defines situations of deprivation today and risks for tomorrow and sets correspondent plans of action to overcome them. There are three different types of problems and consequently three different strategies to be designed and implemented.

First: the energy we consume today is mainly fossil-based and its use is damaging life on the planet. Therefore, we must shift to **sustainable energy**.

Second: access to energy, of an adequate quality and in sufficient quantity, is often beyond affordability for the poorest share of the population, in most countries. This issue is often called ‘Energy Poverty’. Thus, we must make **energy affordable**, and this is one aspect of the fight against poverty.

Third: in large regions of many countries people do not have access to “modern” energy, i.e. to the type of energy that is necessary to a decent life. Elec-

tricity is wholly (or largely) unavailable to over one billion people in the world. Moreover, for 2.7 billion people, thermal energy used for cooking food and warming the home is provided by unprotected combustion of wood or charcoal or other biomass, with serious consequences on human health and the environment. Here the task is to provide access to modern, clean and sustainable energy to all, finding a practical way that is appropriate to the local conditions and economically affordable. This third issue, shortly defined as ‘**access to energy**’, is the object of this paper.

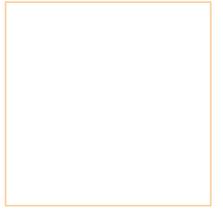
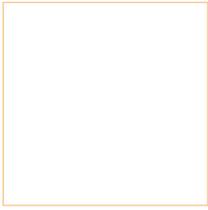
Energy Poverty or just Poverty

Both in the case of energy poverty in a rich country and in the extreme case of total deprivation of modern energy, a fundamental question emerges: does it make sense to speak of ‘energy’ poverty rather than simply speak of poverty? to mention ‘lack of access to modern energy’ rather than lack of goods and services essential to life? What is the point in distinguishing among different aspects of an overall condition?

The issue is serious and must be met. *Prima facie*, one is attracted by the idea that a poor is a poor and there is no point in listing and distinguishing the many resources and benefits (s)he is not endowed with. And that the fight against poverty, is better waged with an overall, holistic approach rather than a fragmented, piecemeal one.

The answer is different in the case of the rich areas where energy is materially accessible even to the poor but not affordable by them for economic reasons, and in the case of regions where access is simply not available.

When and where energy is physically accessible, and average income is high, the old libertarian thesis has some plausibility. I am referring to Milton Friedman’s statement that the best way to alleviate poverty is an income support such as a negative income tax,



that “gives help in the form most useful to the individual, namely cash” and leaves the individual full freedom to decide what to buy, and “to make their own mistakes”²

Although it is accepted that poverty often has specific causes and that policies against poverty must be more complex than a simple income relief, it is not at all obvious that the problem of poverty should be split into sectoral indicators of deprivation and that social policies should be separately addressed at households that have trouble paying energy bills, or rent, or food, or facing children school costs.

When access to modern energy is just not available, things are different. Here there is no doubt that cash will not do. A solution must be found at the community level, rather than at the individual level. Moreover in many cases, even at the community level, cash grants to the local administration will not solve the problem. A solution must be found that takes into account the density of population, the availability of primary sources of energy, and other environmental and social characteristics of the place, and this is a task for specialists in the energy industry. Sector analysis is necessary, and consequently, it makes sense to speak of energy poverty. Specific solutions to face it are required, and specialised actors are needed to plan possible actions and implement them.

The challenge of providing access to energy is part of the general challenge of fighting extreme poverty, but analysis must focus on specific causes and conditions, and solutions are specific. Within the frame of international development cooperation, it is necessary that many public and private organisations, that have the means and the know-how for facing the specific issue, be partners in providing a solution.

Apparently, a sectoral approach complicates the issue. In fact, the issue is complex by itself, and setting sectoral targets is a way of scaling it down to more manageable proportions. By evidencing more specific opportunities and responsibilities, a sectoral

approach may be conducive to results that would look out of reach otherwise.

Access to Energy as a Goal

At the turn of the millennium the United Nations, engaged in the affirmation of Human Rights since their foundation, turned to a more concrete and progressive action to establish and pursue a set of Goals that can make the idea of human dignity and development concrete: the Millennium Development Goals.

At the end of the 15 years dedicated to the MDGs, the General Assembly of the UN in its 70th session, September 2015, adopted a 2030 Agenda, replacing the 8 MDGs with 17, more precise, Sustainable Development Goals.

The theme of energy becomes evident. It had been already put under the attention of the world by the launch of a specific UN initiative, “Sustainable Energy for All (SE4All)” in 2011. Now Goal n.7 is “Ensure access to affordable, reliable, sustainable and modern energy for all”.

Not only were the 17 Goals decided, but also a complex machinery of monitoring progress was designed and set up.

The Road to Achievement of the SDGs: Targets, Indicators, Monitoring

In order to transfer the general statement of SDG n.7 into action, 3 targets were set: universal access, environmental sustainability as identified with the share of renewable sources in total energy, and again sustainability as identified with a rapidly increasing efficiency in all uses of energy. The official wording is:

Global achievement of the three targets will result from what each country will be able to achieve inside its borders. Consequently, achievement at the

2. Friedman M., *Capitalism and Freedom*, U. of Chicago Press, 1962, Ch.XII



country level can be measured, and specific indicators have been set:

- 7.1.1 Proportion of population with access to electricity
- 7.1.2 Proportion of population with primary reliance on clean fuels and technology
- 7.2.1 Renewable energy share in the total final energy consumption
- 7.3.1 Energy intensity measured in terms of primary energy and GDP.

The initial definition and the continuous monitoring of these indicators is not without problems. As an example, what is access to electricity? Millions of people in the world have a connection to an electric grid but do not get more than an intermittent flow of electric energy, often insufficient in quantity (power) and quality (voltage and frequency). Others have no connection to a large grid but get some electricity from an individual diesel generator, or from a solar home system (with or without battery storage), or from connection to a local (village) mini-grid, and here again, a problem of adequacy and quality arises. Complex indicators have been studied and are applied.³

Another example is: how to measure achievement of the third target on energy efficiency? This is a three-stage operation. First, set a measure of efficiency as the ratio of GDP to total primary energy used, i.e. the reciprocal of energy intensity of GDP. Second, choose a time period before 2015 and calculate an historic annual rate of change of efficiency. Third, calculate the same rate of change in the present period under consideration (say, between 2015 on 2017) and compare it to the previously calculated

historic value, to check whether it has doubled. All this is fairly clear, yet an agreement is necessary in setting comparable time periods and definitions of GDP (at constant prices of course).

In principle, it is possible to measure the degree of achievement of the three targets in any country of the world. In fact, problems arise with respect to some items, such as measurement of the primary energy used in countries where “population relying on traditional biomass” exceeds 50% and in many cases even 80% of total population. Here the level of energy intensity (efficiency) is a rough guess and its rate of change over a period of a few years is an unreliable figure.

The most serious problem, however, is not statistical: it is social and political. Some countries in the world, where incomes are very low, have no way of meeting the targets if they have to rely on their own economic and financial resources.⁴

International cooperation is needed, and the formulation of the SDGs has taken this need into account, through two complementary ways.

International Cooperation: Targets Set within the 16 Goals

One way is internal to each SDG: additional targets take care of this need and are referred to activities in the area of cooperation for development. SDG n.7 has two additional targets:

- 7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil fuel technology and promote investment in energy infrastructure and clean energy technology

3. Ranci P., Leonardi M. and L. Susani, *Energy Poor*, il Mulino, 2017, Ch.1 par.1.3 Measurement problems, <https://www.mulino.it/isbn/9788815334282>

4. In addition, the different targets have different degrees of social urgency, so that an increase in the share of population having access to modern energy may be obtained by using more fossil fuels (e.g. compressed natural gas or petroleum gas for cooking, diesel generators for normal electricity generation or at least for back-up generating capacity).



- 7.b By 2030, expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, in particular, least developed countries, small island developing States, and land-locked developing countries, in accordance with their respective programmes of support.

These targets are much more vaguely expressed than the previous ones (7.1, 7.2 and 7.3). The task of setting indicators that could make these targets clearer, and identify activities apt to the challenge, has only been initially undertaken. The indicators available today are:

- 7.a.1 International financial flows to developing countries in support of clean energy research and development and renewable energy production, including in hybrid systems
- 7.b.1 Investments in energy efficiency as a proportion of GDP and the amount of foreign direct investment in financial transfer for infrastructure and technology to sustainable development services.

International Cooperation: the 17th Goal

The other way is represented by Goal number 17: “Strengthen the means of implementation and revitalise the global partnership for sustainable development”. An additional Goal which encompasses both monitoring and cooperation for all of the other 16 SDGs. It is a sort of catch-all container, and in fact, its targets are 19, and its indicators are 25, two long lists of sometimes measurable and sometimes very vague items.

The best measurable and focused are:

- 17.2.1 Net official development assistance, total and to least developed countries, as a proportion of the Organization for Economic Cooperation and

Development (OECD) Development Assistance Committee donors’ gross national income (GNI)

- 17.3.1 Foreign direct investments (FDI), official development assistance and South-South Cooperation as a proportion of total domestic budget
- 17.7.1 Total amount of approved funding for developing countries to promote the development, transfer, dissemination and diffusion of environmentally sound technologies
- 17.9.1 Dollar value of financial and technical assistance (including North – South, South – South and triangular cooperation) committed to developing countries.

Making forecasts on the use of these numerous indicators is difficult. Regardless, they are not sector-specific, and it is impossible to guess whether their existence and use will significantly change the prospective implementation of actions adequate to reaching Goal n.7.

A Bleak Outlook

As clearly explained by the International Energy Agency ⁵, Goal number 7 is not being met, and it is highly likely that the problem will remain in the year 2030 and beyond. The forecast is that there will be an increase in access to electricity while the population will also increase in the areas affected by this and other deprivations. Even in the New Policies Scenario the number of people without access to electricity will only drop from the present 1.1 billion to 780 million (of whom 620 in Sub-Saharan Africa) and people without access to clean cooking facilities from 2.7 to 2.3 billion.

These are numbers of failure. New figures are due in October 2017, and it will be interesting to see whether the world has been on the same track as forecast one year ago.

5. IEA, *World Energy Outlook 2016*, p. 92



We are surrounded by exciting news on technological progress and on so many ambitious programmes being decided and launched by governments, international bodies, nonprofit entities of all sizes and types, that we are entitled to expect some positive surprise.

Even if we cultivate a secret hope that technology, generosity and entrepreneurship may surprise us soon with positive results, there are good reasons for believing that the picture offered by the official data calls for some special additional effort.

A New Effort

Which type of effort? Moreover, how to promote it?

The key issue is **responsibility**. In general, responsibility for reaching the SDGs lies with governments, whose actions can be more or less directly linked to the overall results. In the case of Goal n.7, access to clean cooking is traditionally outside the scope of government actions. Even in the case of access to electricity, the share of the population that is still deprived has less and less to do with traditional electrification via an extension of the national grid. So, while electrification proceeds and the economy grows, the remaining area of unachieved access to modern energy increasingly requires the mobilisation of society and the contribution of non-governmental actors.

The same observation applies to the contribution of **international cooperation**. No link can be established between the degree of achievement of one Goal in (poverty stricken) country A and any measure of effort by (affluent) country B. No link implies no evidence of responsibility, no possibility of acting via obligations and sanctions.

How to promote a new effort? Is there an intermediate way between an impossible system of measurable targets and consequent sanctions to non-complying entities, and a vague system of exhortations and exercises in communication?

A parallel with climate policy is possible, where (i) global deprivation of a global public good prevents identification of who is directly responsible, which raises the issue of a global interest in national behavioural changes; (ii) the attempt to reach an agreement on setting common compulsory standards to national behaviour has failed; (iii) a world-level political authority is missing, and (iv) standards cannot be agreed upon, and in any case they could not be enforced.

In the case of access to energy, we have measurable deprivation in one country that cannot be eliminated by unilateral action by the country itself. This calls for international cooperation. On the other side, deprivation in one country cannot be linked to specific standards of behaviour or actions by any individual government of another country, or any subject whatsoever. Again, compulsory standards and coercion provide no answer.

Careful attention should then be paid to the approach that has been introduced into global climate policy by the agreement reached at the Paris COP 21 of 2015. It is based on **voluntary commitments** including actions to limit emissions ('Intended Nationally Determined Contributions'), transparency and reporting.⁶

This approach looks interesting as a complement to the present apparatus for monitoring the implementation of the SDGs, especially with regard to international cooperation and the inclusion of non-governmental actors (not only the NGOs proper but all entities of the private sector, including multinational

6. The novelty and potential effectiveness of the Paris COP21 approach are clearly set forth by Laurence Tubiana in the introductory chapter of Henry C. and L. Tubiana, "Earth at Risk: Natural Capital and the Quest for Sustainability", Columbia U.P., forthcoming.



companies). Both non-governmental actors and foreign governments could publish their “intended contributions” and commit to **transparency and reporting**.

The actors of the non-governmental sector would have good reasons for joining this effort. NGOs would acquire recognition and possibly attraction of support. Companies would gain in reputation and acceptance.

Donor countries would enter a virtuous competitive game of somehow comparable commitments.

An experiment in the type of action described above would require one reference platform for collecting, checking and assembling contributions. The existing apparatus could best provide for monitoring the SDGs. A possible role could be assigned to the UN Global Compact, an initiative participated by a myriad of entities representing the civil society, that since year 2000 has the task “to encourage businesses worldwide to adopt sustainable and socially responsible policies, and to report on their implementation”.⁷

7. <https://www.unglobalcompact.org/>

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