**Workshop Summary**
**Capacity Development for Mainstreaming Energy Sustainable Development Goals, Targets and Indicators into Statistical Programmes in Selected Latin American Countries**
**Panama City, Panama, 4-6 February 2015**

International Collaboration and Participation

The workshop was organized by the Division for Sustainable Development (DSD) of the Department of Economic and Social Affairs (DESA) of the United Nations (UN) in cooperation with the following organizations:
• UN Statistics Division (UNSD)
• World Bank
• UN-Energy
• Sustainable Energy for All (SE4ALL)
• International Energy Agency (IEA)
• UN Regional Centre for Latin America and the Caribbean, United Nations Development Programme (UNDP)

The workshop had the participation of 6 countries in Latin America:
• Brazil
• Ecuador
• Cuba
• Guatemala
• Costa Rica
• Panama
A total of 37 people participated in the workshop including experts from countries and international agencies and support staff from UNDP. The workshop was hosted by UNDP in Panama City, Panama.

Workshop Scope and Objectives
The scope and objectives of the workshop were to:

1. Introduce the new post-2015 Development Agenda of the United Nations and its proposed energy goal, targets and indicators for sustainable development
2. Present international efforts on goals, targets, indicators and statistics programmes for energy
3. Discuss national statistical programmes in participating countries.
4. Analyse and discuss possible expansions and adaptations to existing national programmes to be able to incorporate relevant proposals for the post-2015 period
5. Discuss international cooperation in support of national statistical programmes

International Efforts
Six international efforts on energy goals, targets, statistics and indicators were analysed and discussed:

• Post-2015 Development Agenda and the proposed Sustainable Development Goal (SDG) and target proposals on energy for sustainable development (UN-Energy / DSD)
• Energy Indicators for Sustainable Development (DSD)
• Energy Statistics and International Recommendations for Energy Statistics (UNSD)
• Sustainable Energy for All (SE4ALL)
• Global Monitoring Framework of the Sustainable Energy for All Initiative (World Bank)
• Statistics Programme and Manual on Energy Efficiency Indicators (IEA)

Post-2015 Development Agenda and the proposed Energy SDG and target proposals (UN-Energy / DSD)

The United Nations is in the process of defining a post-2015 Development Agenda to be launched at a Summit in September 2015, which is also the target date for realizing the Millennium Development Goals. The SDGs will replace the MDGs, which did not explicitly include energy as one of its eight goals. The Open Working Group on SDGs of the UN General Assembly adopted a proposal in July 2014 with 17 SDGs and 169 targets, but the indicators are not yet defined. SDG # 7 is dedicated to energy and is defined as "ensuring access to affordable, reliable, sustainable and modern energy for all." This proposal has five targets; three are primary and the other two are considered means of implementation. The energy targets, which are defined to be achieved by 2030, are: 7.1) ensuring universal access to affordable, reliable and modern energy services; 7.2) substantially increase the share of renewable energy in the global energy mix; and 7.3) double the global rate of improvement in energy efficiency. The means of implementation by 2030 are to: 7.a) 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; and 7.b) expand infrastructure and upgrade technology for supplying modern and sustainable energy services for all in developing countries, particularly least developed countries and small island developing states.

The post-2015 development agenda has three important intergovernmental mechanisms: the High Level Political Forum (HLPF), the Sustainable Development Goals (SDGs) effort and the Committee on Financing for Development.

Energy Indicators for Sustainable Development (DSD)

Energy Indicators for Sustainable Development (EISD) was a study done several years ago by five international agencies: DSD / DESA, International Atomic Energy Agency, Eurostat, International Energy Agency, and the European Environment Agency. The EISD study includes a total of 30 indicators that help countries with the necessary statistical capacity building to promote energy sustainability. The study includes a publication detailing guidelines and methodologies on how to build these indicators. The EISD were implemented in seven countries and the results were summarized and published by DSD / DESA. The EISD set works as a statistical tool for systematic analysis, decision-making, policy formulation and effective monitoring. The application of the entire set of EISD can provide

an overview of the state of energy and sustainable development in any country and for developing energy strategies that support national sustainable development objectives. The selection criteria for indicators include considerations of data availability in developing countries and the viability of the collection of additional data that are considered essential for the development of other important indicators. The indicators and statistical requirements must be in harmony with national capacities and priorities. Countries in their national statistical programmes do not have to implement the full set of indicators, but can select those that are relevant.

Energy Statistics Programme and International Recommendations for Energy Statistics (UNSD)

Statistical efforts from the UN Statistics Division (UNSD) include data collection and a statistical production process with energy statistics covering more than 220 countries in an annual collection of data from 1950 through 2011. There is data on over 60 products including capabilities of electricity and refineries. The dissemination of data is free. Publications on energy include the Energy Statistics Yearbook, the Monthly Bulletin of Statistics, and Energy Balances and Electricity Profiles. The methodological work relates to the advancement and standardization of statistical methods and classifications, and definitions of energy statistics. UNSD cooperates with the Oslo Group on Energy Statistics, InterEnerStat (Working Group Inter-Secretarial on Energy Statistics) and regional actors such as OLADE. These partnerships harmonize statistics. UNSD also has worked since 2001 with JODI (Joint Data Initiative Organizations), to sensitize market players on the need for greater transparency in oil market data.

In "Energy Balances and Electricity Profiles," the energy balance shows all flows of energy products in an area, such as a country, and over a period of time, which can be measured in years. This is presented in a common unit, and products are aggregated by category: coal, oil, petroleum products, gas and biomass. However, there are limitations on the basic statistics of energy due to the different units of information and different calorific values that make statistics incomparable between different products. Having an energy balance is important to compare the proportion of each source of power for a country and in every sector of economic activity. The Energy Balances can be a tool for energy policy where data can be checked consistently.

The Monthly Bulletin of Statistics presents current economic and social statistics of over 200 countries and territories worldwide. It contains 55 tables, comprising more than 100 indicators, monthly, quarterly and annual data on a variety of topics that illustrate important tendencies and economic trends, including population, industrial production indices, price indices, employment and income, energy, manufacturing, transportation, construction, international merchandise trade, national accounting and finance. For energy, there is data on lignite, crude oil, natural gas and electricity.

The Statistical Commission of the United Nations at its 2011 session in New York adopted the "International Recommendations for Energy Statistics (IRES)." This provides data compilers with a full set of recommendations covering all aspects of the framework of the

statistical production process, from basic concepts, definitions and classifications to data sources, data collection strategies, energy balances, and statistical data dissemination. IRES was prepared by UNSD, in cooperation with the Oslo Group and InterEnerStat. IRES improves comparability between products and countries flows in a way that countries measure the same thing; countries publish similar data formats, data for the different products will be compiled in the same way, and users can easily understand what the statistics represent. IRES created the Standard International Energy Product Classification (SIEC), which provides a framework structure for all energy products. It also provides useful definitions of product flows but there were questions about how these recommendations relate to a particular country, how to gather metadata, and how some examples of the practices of other countries can be seen. To address these issues, the Energy Statistics Compilers Manual (ESCM) is being finalized to complement IRES with many examples and country case studies. Finally, UNSD maintains technical cooperation through meetings all over the world.

Sustainable Energy for All (SE4All)

SE4All is an initiative launched by the Secretary General of the United Nations in 2011. It is a multi-stakeholder platform whose vision is for governments, businesses, civil society and multilateral organizations to work in partnerships and make sustainable energy a reality for everyone by 2030. Its three objectives to be achieved by 2030 are: 1) to ensure universal access to modern energy services; 2) to double the global rate of improvement in energy efficiency; and 3) to double the share of renewable energy in the global energy mix. Achieving the three objectives together will maximize development benefits and help stabilize climate change in the long term. Today there are 1.2 billion people without access to electricity and nearly three billion people without clean solutions for cooking and heating. SE4All continues to work to reduce energy poverty and risks attributed to climate change. At the local and national levels, there are 100 countries (85 developing countries) involved in SE4All, with many in the process of implementing integrated national action plans to strategically transform their energy systems (with support from UNDP, regional development banks, the World Bank and other partners). There are also many municipalities (cities towns, regions or at the sector level) who take measures for sustainable energy through the newly created Global Accelerator Platform for Energy Efficiency. It also has established a global monitoring framework for measuring progress towards sustainable energy for all and its objectives.

Global Tracking Framework of the Sustainable Energy for All Initiative

The Global Tracking Framework is being led by the World Bank in cooperation with SE4All and IEA. It is a system for regular data collection and monitoring of the objectives of SE4ALL and for measuring progress toward their achievements. It is methodologically sound and produces findings that are conclusive and actionable. It also provides a platform for the improvement of this monitoring system. One of the key achievements of the Framework has been to build a platform of data on key energy indicators that is comprehensive in coverage

(over 180 countries) and provides historical perspective (from 1990 to 2010). This data platform was built from a wide variety of existing data sources.

The first pillar is access to energy where the indicators are the percentage of population with a connection to electricity and the percentage of the population who uses primarily non-solid fuels. Non-solid fuels include: (i) liquid fuels (kerosene, ethanol or other biofuels), (ii) gas (natural gas, liquefied petroleum gas (LPG), biogas) fuels, and (iii) electricity. Solid fuels include: (i) traditional biomass (wood, coal, charcoal, agricultural waste, forestry waste, manure), and (ii) processed biomass (pellets and briquettes). The global electrification rate rose from 83% in 2010 to 85% in 2012, compared to 75% in 1990. About 87% of the population without electricity live in rural areas. As a result, the absolute population living without electricity was reduced from 1.2 billion to 1 billion during the monitoring period. The growth rate required to meet universal access for developing countries in relation to using non-solid fuels as a primary source was an annual growth of 1.7% by 2030.

In the second pillar, energy efficiency, the indicator is the annual compound growth of primary energy intensity, the ratio of total primary energy supply and gross domestic product (GDP) measured in terms of purchasing power parity (PPP). Global databases are then built from these accessible sources. However, advances in energy efficiency are extremely difficult to capture. The efficiency indicator accelerated during the period 2010-2012 but it is still far from the target rate. It is still below the 2.6% annual improvement needed between 2010 and 2030 to meet the target set by SE4All.

Lastly, for the third pillar, renewable energy, the indicator is the percentage of total final energy consumption from renewable sources. Methodological aspects on tracking targets for renewable energy are complex. Challenges include how to measure sustainability, monitoring of progress in the field of primary or final (energy balances) energy and lack of data on bioenergy (modern vs. traditional), and on the distribution of electricity distributed, mini-networks or out-of-network configurations. The next steps include plans for a survey of global energy access to be launched in 2015 with implementation of multi-level frameworks in major countries with access deficit. There are also plans for a worldwide release of RISE (Readiness for Investment in Sustainable Energy) and a consortium committed to the next update of the Global Monitoring Framework in 2017.

Indicator and Energy Statistics Programmes and Manuals for Energy Efficiency Indicators (IEA)

The International Energy Agency, IEA, is an autonomous organization that works to ensure reliable, affordable and clean energy for its 29 member countries. Four main areas of the IEA are: energy security, economic development, environmental awareness and worldwide commitment. The IEA supports governments with regional recommendations for Latin America and the Caribbean to prioritize and implement energy efficiency policies. The energy indicators are crucial to all dimensions of sustainable development. Electricity consumption per capita and CO2 emissions are two examples of what the IEA measures. To see which indicators are needed and how they develop, it is necessary to understand the

context and specific priorities of each country. After identifying priority areas for action, optimal indicators for goal setting and impact assessment are designed. Requirements, data availability and gaps in data are then reviewed. The IEA collects national data to develop international comparable indicators. This work on energy statistics indicators is performed through five questionnaires on coal, oil, gas, renewable energy and waste, and energy and heat. The information is then compiled into basic statistics on energy, energy balances and CO2 emission indicators. Energy balances is key to the development of high-level indicators and also provides information on the entire economy. There are two manuals on statistical indicators and policy for a harmonized approach to setting goals and monitoring progress. To improve capacity building, training and international cooperation is needed. International cooperation will be essential to develop the ability to monitor the progress of sustainable development goals.

The Energy Efficiency Indicators Manual (2014) reflects the essential role of energy efficiency in global and regional perspectives. According to the publication, World Energy Outlook (2012), a huge potential for energy efficiency has not been realized in developing countries and two-thirds of economic potential for improving energy efficiency remains underused. However, a focus on multiple benefits for energy efficiency reveals a wide variety of possible positive impacts. Recommendations of regional policies for Latin America and the Caribbean include: designate institutions for planning, coordination, implementation and monitoring of policies and programmes for energy efficiency; establish regular collection of energy efficiency data and indicators; eliminate inefficient energy subsidies; stimulate the development of markets for energy efficiency and develop information and awareness campaigns and educational programmes.

Energy and the Economic Dimension of Sustainable Development

In the economic dimension of sustainable development, the main topics discussed were the levels of economic activity, energy production, supply and consumption, energy prices, taxes and subsidies, efficiency of energy supply and energy security. This also included energy efficiency in supply systems, total energy intensity (basic energy indicators), efficiency of economic sectors (using energy indicators combined with data on value added or industrial production) and fuel diversification and renewable energy. As an example, for fuel diversity and renewable energy in Brazil, there was a sharp drop in the past 35 years in use of wood with an increase in oil (37.8% of the total energy supply in 2009). The use of sugarcane products and hydropower also increased. Much of electricity generation (80-90%) in Brazil comes from renewable energies compared with 18% in the rest of the world.

For the economic dimension, the connection between energy use and economic growth as a whole is an indicator of efficient use of energy resources, while efficiency at different stages of power supply is the indicator for its general use. Important questions on the economic dimension include: 1) What is the country's dependence on net imported energy? 2) What is the countries from which imports of energy come from? 3) What is the relationship between reserves and production? 4) How diverse is the energy mix for the country?

Energy and the Environmental Dimension of Sustainable Development

The main issues addressed in the environmental dimension are global climate change, air pollution and atmosphere, water pollution, waste, resource depletion of energy, land use, accidental risks and deforestation. To measure the impact on the atmosphere and air quality, several data are needed: the ambient concentration of air pollutants in urban areas; information about the site location and type of area; and emissions of air pollutants from power systems and energy activities, including electricity generation and pollutants from the transport sector. For impacts on water from power systems data on pollutant discharges in liquid effluents from energy systems is needed. In addition, data related to cooling water discharges are needed, which can increase the temperature of the stream of water; and oil discharges into coastal waters. For impact on land, field data on areas where acidification exceeds the critical load are needed; deforestation rate attributed to energy where wood is used for energy purposes; the relationship between solid waste generation to units of energy produced; the ratio of solid waste properly disposed of in total solid waste produced by the energy sector; and the ratio of radioactive waste coming from nuclear fuel cycles.

An accurate accounting of all energy flows is essential and energy balances are important for estimating CO2 emissions. Estimates should focus on fuel combustion as the major source of energy output and where the combustion of fossil fuels (coal, oil, natural gas) generates CO2 emissions. The estimation of CO2 emissions is also based on the conservation of coal, where energy consumption is multiplied by the calorific values for CO2 emission factors. In the analysis of trends in emissions of CO2, what drives global trends in CO2 is the population multiplied by per capita GDP, multiplied by the energy intensity of the economy and then by the carbon intensity of the source of energy.

Energy and the Social Dimension of Sustainable Development

The indicators on the social dimensions for energy are accessibility, affordability and disparities. For accessibility indicators, data are needed on the percentage of households (or population) without electricity or commercial energy, or that are highly dependent on non-commercial energy in relation to the total number of households or population. To measure affordability, data on household income and expenditures on fuel and electricity are needed. To see the disparity, data on energy use of households in relation to each income group and the combination of corresponding fuels used should be collected. The issue of equity is looked at through an analysis of disparities in accessibility and affordability. These subtopics relate to the different methods of capturing equity. Sometimes the accessibility and affordability data are linked since a higher level of minimum amount of energy is needed to meet basic needs and facilitate income generation to empower growth and development. Only income generation can really make energy affordable. As an example of independent renewable energy systems for poor communities, the "Light for All" programme in Brazil was presented as a case study. The goal was universal access to electricity in Brazil. Created in 2003 by the Ministry of Mines and Energy, the programmes brought electricity to 12 million people, of whom 10 million lived in remote areas. Operated by Eletrobras, the largest electric utility in Brazil, and executed by a concession of electricity cooperatives, the

programme has been renewed twice since its inception and focused attention on renewable energy projects.

Means of Implementation and the Energy Nexus with Other Factors of Development

The indicators for means of implementation of the sustainable development goals in energy have not yet been defined. For SDG #7.a, first part, "to promote international cooperation and access to research and energy technology" possible indicators include: the percentage of international cooperation projects dedicated to develop clean energy projects; the volume of trade related to clean-energy technologies; the number of engineers and technicians working on clean energy technology in the country, the number of patents and technical publications, research programmes and systems development for clean technologies, and the number of policies that facilitate trade in clean energy. For the second part of the SDG #7.a, "promote investment in energy infrastructure and clean energy technologies," possible indicators may include: foreign direct investment, official development assistance, the percentage of budget for research and development of energy technology, and a national budget for sustainable energy systems. In SDG #7.b, "expand infrastructure and improve technology to provide modern energy services," indicators may be as follows: the budget for the renovation of sustainable energy infrastructures and the budget for transmission infrastructure for the integration of renewable energy.

For the energy nexus with other factors such as water, food security, gender, education, poverty, and health, possible targets were discussed for these energy nexuses along with the need to act comprehensively and in an integrated manner for achieving sustainable energy development. For example, the energy and water nexus can be addressed by maximizing the use of sustainable and efficient energy for sanitation systems and for the processing, distribution and cleaning of water and for water heating. A pilot project in Bolivia was presented where solar panels as well as thermal solar water systems were installed. A greenhouse was built and clean kitchen facilities were also installed. This was an example of what can be done using the nexus approach. Two critical issues at national level are related to synergies that can be achieved to enhance efficiency and policies designed to avoid competing for resources available for alternative development factors.

National Statistical Programmes

Recommendations from each country on regional and international cooperation, and on advantages and challenges related to their national statistical programmes, can be found on the website of the workshop.

Brazil – The workshop was a great opportunity to share experiences and to assess many new ideas including the development of national indicators that can be added to the country' statistical yearbook. Many statistical data are already available to develop energy indicators. Moving forward, the delegation of Brazil wants to further discuss the possibility of having a harmonized proposal for all countries to support the IEA, World Bank and other international organizations to find energy indicators that can be used comparably by all countries, specifically for sectors that regulate the national oil industry. In the last 12 years, Brazil has

worked on having a successful social inclusion programme, for example in relation to access to electricity. Four proposals that Brazil is considering include: 1) more information on specific consumption by energy source; 2) more information on availability of fuelwood for consumption in the residential sector; 3) in relation to the different sources of energy and electricity, a general framework is needed in which all countries are working on the same conversion procedures for primary energy and secondary energy sources; 4) conducting these workshops regularly, including linking them to the Development Agenda for the post 2015 period. Brazil proposes for UN-Energy and the IEA to develop a methodology that could harmonize energy statistics and has international recognition.

Costa Rica – The delegation posed two questions: 1) how are countries going to meet the SDGs at the national level? How are countries going to measure doubling the global rate of improvement in energy efficiency? How to double the use of renewable energy? The country is already covering 96% of its electricity with renewable energy. 2) How each country will contribute to the definition of the goals and indicators? Costa Rica would like to focus their efforts on improving their energy indicators. The delegation presented their current needs: 1) modernization of information systems and new data processes that are not available at this time. 2) cooperation with surveys which are conducted year but could include new questions. 3) A legal framework – the delegation believes it is necessary to study this to see what changes should be made to collect data from public and private entities. 4) Training – explore the possibility to have workshops nationwide, with teams from other countries and other institutions for the purposes of knowledge sharing.

Cuba – The delegation saw this workshop as an opportunity for a heterogeneous group with experts from each country to present their different perspectives. The delegation will go back and analyse and make small changes to their statistical programmes, to be in harmony with the discussions at the workshop, also certain statistical indicators will be adapted to improve quality. They see a need to share these ideas with decision-makers in their country, so that this becomes an internal new statistics mechanism in the country. They agree with Brazil on the need for international harmonization. They have tried to adapt the rules and have seen that it is essential to work with standards. They will continue to further their work on energy indicators, including supporting SDG 7.

Ecuador – The delegation has created a visualization of their energy indicators that will be available on their website soon. The delegation hopes some of these indicators will be available in April; and the rest by the end the year. They see a lack of consensus between national entities. Sometimes, the difference in the indicators is confusing to the public. Also because of rotation of personnel in government offices, this is challenging and it takes time to build new relationships. Hopefully there will be a little more support from the state to get more information and data from the private sector. This is not possible now with the laws on confidentiality and the relationship between public and private entities. If a person refuses to fill out a survey, there is not much the statistics offices can do. They focused a lot on sustainability and on renewable energy indicators. They are also seeing environmental expenditures in relation to economic and other expenses. They need a more multi-faceted

approach to working on energy indicators. They will keep their channels open and learn from other regions and countries.

Guatemala - All issues have been very important and the delegation sees many similarities between the countries participating in the workshop. The delegation sees that Guatemala is a bit away from the application of the indicators, but they have a new energy policy since 2013. They think they can integrate many of the things mentioned at the workshop, including SDG #7 into their work. But they will need support to develop indicators and collect these data. They also have limitations collecting data from the private sector. They work based on estimates in some cases. An example is data on electricity generation which is not received from the private sector. They would like to promote changes in legislation to expand access to information, but this requires a lot of political will. They also will study the possibility of integrating national indicators and have it harmonized at the international level. Their Ministry of Environment is working with SE4ALL and preparing inventories of GHG emissions. They will also look to link with the Ministry of Energy and Mines to work together. They also would really like to see more training sessions, for example, to calculate energy indicators and useful workshops with everyone in the different Ministries on board, so that they are all using the same methods. They will need some technical and harmonization mechanism which will allow them to use the same system, instead of different databases following different approaches. The coordination exists, but they will continue to work on the harmonization.

Panama – The delegation expressed thanks for the information shared on the generation of energy indicators. They are linked with the methodologies of the energy sector, for example with OLADE, and the system of regional statistics. For them the success of the energy indicators depends on the data collection. In many cases, Panama does not need to use estimates first, and in the long run this is a good policy. With regard to transport energy indicators - it is sometimes difficult to collect some data and information. They would recommend to the UN to create a type of capacity building initiative with links to legislation, so that countries can collect data from the private sector.