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Research Report

Post 2015: why is the water-energy-land nexus important for the future development agenda?

Briefing Paper, No. 3/2013

Provided in Cooperation with:

German Institute of Development and Sustainability (IDOS), Bonn

Suggested Citation: Brandi, Clara; Richerzhagen, Carmen; Stepping, Katharina M.K. (2013) : Post 2015: why is the water-energy-land nexus important for the future development agenda?, Briefing Paper, No. 3/2013, Deutsches Institut für Entwicklungspolitik (DIE), Bonn

This Version is available at:

<https://hdl.handle.net/10419/199703>

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Post 2015: Why is the Water-Energy-Land Nexus Important for the Future Development Agenda?

Summary

The concept of sustainable development and the idea of an integrated approach that satisfies the complex linkages between water, energy and land should be part of a post-2015 development agenda.

Water, energy and land are essential for many life-supporting functions and key for satisfying basic human needs and development. Access to these resources and their sustainable management are the basis for sustainable development.

Sector policies regarding water, energy and land are intertwined, particularly in their trade-offs. Policies for one sector often entail consequences – externalities – for the other two sectors, be they on a local, national, regional or global scale. These interconnections add to current pressures on water and land as well as on resources that fuel our energy system, and will thus exacerbate existing scarcity problems, as the demand for food, water and energy is expected to rise by 30–40 per cent by 2030.

In the outcome document of Rio+20, water, energy and land feature as priority areas for the formulation of Sustainable Development Goals (SDGs). As regards water, SDGs should build on existing concepts like Integrated Water Resource Management (IWRM) and the human right to water. The UN Secretary General's Sustainable Energy for All (SE4ALL) initiative illustrates what SDGs could look like for the energy sector. SDGs related to land

and biodiversity could build on the UN Convention to Combat Desertification (UNCCD) initiative, which aims at reducing the rate of land degradation, and on the new biodiversity targets that were negotiated in 2010 under the Convention on Biological Diversity (CBD).

In order to take account of the nexus between water, energy and land, any proposed list of goals for a post-2015 agenda needs to meet three requirements:

- (1) *Balancing the social, economic and environmental dimension*: the goals should integrate and balance social, economic and environmental dimensions of sustainability to promote synergies and avoid trade-offs among them.
- (2) *Achieving coherence across goals*: the goals should be coherent with other (sustainable) development goals of the post-2015 agenda and take into account an integrated perspective with a view to the water-energy-land nexus.
- (3) *Agreeing on universal goals*: the goals should apply to all countries universally rather than only to developing countries.

In general, new goals should take into account second-order conditions related to other dimensions (e.g. in the context of sustainable development or the water-energy-land nexus), different levels (global, regional, national etc.) and be adapted to countries' diverse states of development (high-income, middle-income, low-income).

Towards the post-2015 agenda

2015 will be a pivotal year and set the course for environmental and development policy until 2025 or 2030. A process to formulate new development goals in 2015 to succeed the Millennium Development Goals (MDGs) has been set up in the context of the United Nations (UN). As of now, this process is split into two strands. The first strand ties in with the MDGs and focusses on transforming the current development agenda into a post-MDG agenda with a view to removing its weaknesses but maintaining its strengths. The second strand has emerged from Rio+20 and aims at elaborating SDGs. The idea is, first, to broaden the focus of the agenda from human to sustainable development and, second, to enlarge the scope of objectives from developing countries only to all countries. The MDGs encapsulate social, economic and environmental aspects. Yet, the three dimensions are represented in an unbalanced way and without taking due account of the strong linkages among them. Whereas the MDGs are well-defined, the discussion on SDGs is ongoing.

The UN and many experts advocate merging the two processes to allow for greater coherence. However, many developing countries object to this idea and insist on separate agendas for poverty and sustainability. The special event on the post-2015 agenda organised by the President of the 68th session of the UN General Assembly (UNGA 68) in September 2013 has the potential to direct the future course of these developments. The Secretary-General will deliver a key contribution to this event based on the report of the High-level Panel of Eminent Persons on the post-2015 development agenda due in May 2013. Furthermore, the results of public consultations that were held by the UN in more than 60 countries and the proposals of the Sustainable Development Solutions Network (SDSN) led by Jeffrey Sachs will serve as references. The intergovernmental Open Working Group (OWG) on SDGs was set up in January 2013. Despite its delayed establishment, the OWG is expected to submit a first proposal on SDGs at the same time that the special event takes place. Therefore, the special event provides a unique opportunity for merging the separate agendas with a view to a joint post-2015 framework.

A first step to overcome developing countries' concerns and to gain broad support for a joint agenda is the identification of common issue areas. Both agendas give high relevance to poverty eradication and sustainable development through the sustainable use and management of water, energy and land resources. However, the inclusion of water, energy and land issues in a post-2015 regime is important but not enough. The new development agenda should mirror the linkages among them, i.e. the "resource nexus" – a concept that was launched at the Bonn 2011 Nexus Conference and is in the focus of the European Report on Development 2011–2012.

Poverty and the water-energy-land nexus

Water, energy resources and land provide many life-supporting functions, e.g. climate stabilisation and regulation of the

hydrological cycle, and are key resources to satisfy basic human needs and allow for development. However, 780 million people lack access to safe water, about 1.5 billion people have no access to electricity, and for most of the world's poor, arable land is their main source of livelihood. Access to these resources and their sustainable management are the basis for inclusive and sustainable development as well as poverty reduction. Yet, the demand for food, water and energy is expected to rise by 30–40 per cent by 2030.

Reliable access to water and, at minimum, acceptable levels of quality, availability and affordability of water are indispensable in the fight against poverty. Poor people are most vulnerable to underprovision of water and damages due to floods, as they lack the financial means to invest in reliable infrastructure. Access to clean drinking water allows for the use of water in personal hygiene and household chores. Access to sustainable sources of clean, reliable and affordable energy is also fully recognised as being crucial to poverty reduction and economic development. Poverty reduction and sustainable land use are also closely inter-linked because access to land and the conservation of ecosystems relevant for food production are essential to fight hunger and undernourishment.

The water, energy and agricultural sectors are interlinked: policies affecting one resource often include negative externalities for other resources – be they in a local, national, regional or global context. Sector policies aiming at security in one sector have repercussions on resources in other sectors and can compromise other objectives. Cultivating crops to produce biofuels for energy security consumes water and land resources, thereby competing with food production and compromising food security. Expanding arable land and intensifying agriculture to improve food security compromise the protection of forests and increase the pressure on land. Water supplies for households, industry and agriculture rely on electricity, but, in turn, electricity generation requires considerable amounts of water.

Water, land and resources that fuel the energy system (e.g. fossil fuels, timber) are already under pressure and being challenged by human-induced impacts (e.g. land degradation and desertification, climate change, water and nutrient depletion) due to population growth, increasing standards of living, changing diets and consumption patterns, and urbanisation. Pressure increases if policies do not take into account this interrelatedness and can result in scarcity, environmental degradation and/or the destruction of livelihoods.

Water, energy and land in the MDGs and SDGs

Neither water nor energy or land use is explicitly included as one of the eight MDGs. Yet, MDG 7, to ensure environmental sustainability, comprises a target for water and sanitation – but the target only takes into account social but not economic or ecological issues. MDG 7 also includes a reference to sustainable land use, energy efficiency and CO₂ emissions. The target to reduce by half the proportion of

people without sustainable access to safe drinking water was achieved in 2010. The biodiversity target – to achieve a significant reduction in the rate of loss by 2010 – was incorporated into MDG 7 in 2002 but could not be met.

The outcome document of Rio+20 underlines the importance of water, energy, land and biodiversity as priority areas for SDGs. In the Secretary-General's initial input to the OWG on SDGs, based on a survey of Member States' views on SDGs, food and agriculture (land), water and energy rank on the top three positions. When looking for new goals in these issue areas, ongoing initiatives and parallel processes need to be considered.

The MDG targets for drinking water and sanitation could be renewed with new time limits, while at the same time broadening their scope to the economic and ecological dimensions. Currently, water is separately discussed in two areas in the context of the post-2015 agenda: on the one hand, as an issue related to human development (e.g. safe drinking water); on the other hand, as an issue related to oceans, fisheries and pollution. This distinction is surprising in view of the circulatory nature of this natural resource on the global scale. Water pollution may cause health problems at the local level, but may simultaneously jeopardise ocean fish stocks at the global level. A water-related SDG should aim for a much more integrated approach, e.g. on the basis of the concept of IWRM, which promotes the coordination of managing water, land and related resources while maximising economic and social payoffs without compromising ecosystems. The Stockholm Statement formulates relative water goals from a general and cross-sectoral perspective (e.g. a 20 per cent increase in water efficiency in agriculture and energy production or a 20 per cent decrease in water pollution), but would need further development. The concept of a human right to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses for everyone also bundles together many crucial aspects.

For energy, the UN Secretary General's SE4ALL initiative is an illustration of what an SDG could look like. The initiative has already gathered substantial support. It includes three targets for 2030: universal access to modern energy services; doubling the rate of energy-efficiency improvements; and doubling the share of renewable energy in the energy mix. Baselines and indicators for these three targets are currently being discussed and expected to be published in 2013, in time to be fed into the post-2015 negotiations. The SE4ALL targets encompass the three dimensions of sustainable development by considering energy access (social), energy efficiency (economic) and use of renewable sources (environmental). All in all, the SE4ALL initiative provides a sound basis for energy goals in the post-2015 agenda.

Regarding land use and biodiversity, the initiative of the UNCCD aims to reduce the rate of land degradation in order to achieve land-degradation neutrality. It states sustainable land use for all and by all (in agriculture, forestry, energy, urbanisation) and includes three targets: zero net land degradation by 2030; zero net forest degradation by 2030;

drought policies and drought preparedness implemented in all drought-prone regions / countries by 2020. In addition, new biodiversity targets were negotiated in 2010 by the 193 parties of the CBD, the so-called Aichi Biodiversity Targets. For example, by 2020, the rate of loss of all natural habitats, including forests, should be at least halved and even brought close to zero, and degradation and fragmentation should be significantly reduced. By adopting these targets, the parties of the CBD committed themselves to an ambitious plan to stop the loss of biodiversity by 2020.

The nexus in the post-2015 agenda

In order to integrate the "resource nexus" into the post-2015 agenda, any proposed list of goals should go beyond silo thinking and needs to meet three requirements:

(1) Balancing the social, economic and environmental dimension: the integrative character of the new post-2015 agenda could be fulfilled by using second-order conditions. For instance, if environmental protection as a second-order condition is integrated into an objective that focusses on human development, it can be ensured that human development does not result in environmental degradation.

In the context of water, for instance, dam construction for hydropower plants leads to high economic yields, but provokes the loss of biodiversity in the flooded area and has huge social impacts if people need to be resettled. A target on universal access to energy should be balanced by another target promoting clean energies so that the social and economic gains of energy access do not come at the expense of the environment. Similarly, targets promoting clean energy may lead to an initial increase in energy prices – such targets should then be complemented by targets that promote access to affordable energy by all. Likewise, the social and economic impacts of targets for sustainable land use and biodiversity conservation need to be balanced. The SE4ALL initiative illustrates these difficulties. On the one hand, the initiative should become the basis for a goal on sustainable energy in the post-2015 agenda, as the three dimensions of sustainable development are reflected in the targets. On the other hand, the targets have not been integrated, such that the achievement of one would depend on the other two.

(2) Achieving coherence across goals: taking account of the water-energy-land nexus requires the formulation of coherent goals that allow for an integrated perspective across goals. The design of future objectives should take into account the multidimensional context full of interdependencies. For example, the construction of reservoir-based hydropower plants can jeopardise water security and create water scarcity downstream; the creation of a reservoir may also conflict with previous land use for agriculture. Energy, in turn, must be supplied in ways that do not undermine other development goals, for example by increasing climate risks, degrading land and using water unsustainably.

The problem is that energy is a key driver behind a number of critical environmental pressures, including GHG emissions (of which energy-related emissions represent roughly 75 per cent of the global total) and land and water use and degradation. If expanded further, biofuels, biomass and hydropower may appropriate significant shares of available land and water resources. Especially the rapid development of biofuels has generated considerable debate regarding their sustainability and, above all, the so-called food versus fuel competition. The current trend towards large-scale acquisitions of agricultural land may imply that access to water is also acquired on a large scale – and points to the multiple facets of managing the natural resource base in the context of a globalised economy. The implementation of the nexus requires policies, institutional arrangements and procedures that are able to take account of trade-offs and synergies.

- (3) **Agreeing on universal goals:** the goals in the post-2015 agenda should be universal, in that they apply to all UN member countries, regardless of the economic, political, legal, social and environmental circumstances. To identify and specify universal goals, all countries will have to commit to this joint global effort – not only developing countries, as happened before. Developing countries' goals on water, energy and land should centre on access and sustainable management, whereas goals in emerging and industrialised countries should focus on sustainable production and consumption issues. Each goal should include a deadline specifying the month and year. To formulate such goals, two options seem to make sense. First, each goal should describe comprehensively the objective and underlying concept and explicitly specify through targets the implications for each country or group of countries. Second, the goal should be formulated in an abstract way and the formulation of targets should be subject to a national pledge-and-review approach, wherein pledges are made on a voluntary basis. Although a

detailed discussion of the pros and cons of each option is beyond the scope of this paper, some points are immediately apparent: the first option facilitates accuracy and precision but is politically less feasible and makes communication harder. The second option allows for conciseness but requires additional explanations. For instance, the goal "to have universal access to water by 2030" would be easily understood, but the scope and the points of reference for each country or group of countries would need to be defined. Furthermore, a pledge-and-review approach can help to overcome negotiation hurdles but bears the risk of leading to weak targets. This approach is particularly useful in the context of goals for resources, for which limits at the global level make little sense, as in the case of water accessibility at the local level.

The way forward

In September 2013, the special event on the post-2015 agenda will provide an opportunity to merge the two ongoing processes for working on the post-2015 agenda. As long as this separation is maintained, two things should be included in both agendas: the nexus perspective as well as the idea of water, energy and land as key resources. However, joining the post-MDG and the SDG processes into a single agenda would avoid the wasting of resources due to parallel processes. Already existing processes, such as the SE4ALL initiative or the Aichi Biodiversity Targets, should be used and linked in order to identify goals that build upon agreed language and reflect consensus among the stakeholders. Goals should be designed in such a way that they take into account second-order conditions related to other dimensions (i.e. sustainable development and the water-energy-land nexus), the different levels (global, regional, national, local), and are adapted to countries' diverse states of development (high-income, middle-income, low-income). The true challenge is to design integrated, consensual objectives that are easily understood, communicable, and cut across various sectors, dimensions and periods of time.

DIE's post-2015 briefing paper series has so far covered the following issues:

Loewe, M. (2012): Post 2015: How to Reconcile the Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs)?, Bonn: DIE (Briefing Paper 18/2012)

Stepping, K. (2013): Post 2015: What Can Be Learnt from the Impact of Health Performance on Donor Policies for Health Assistance?, Bonn: DIE (Briefing Paper 1/2013)

Literature

EU (European Union) (2012): Confronting scarcity : managing water, energy and land for inclusive and sustainable growth (European Report on Development (2011–2012))

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