

NO SOUTH STREAM? INNOVATIVE OPTIONS FOR BEING ENERGY INDEPENDENT

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Even before, when South Stream project was still on board, Macedonia was not on a map as a transit country. "As planned, the pipeline would run under the Black Sea to Bulgaria, and continue through Serbia with two branches to Bosnia and Herzegovina and to Croatia. From Serbia the pipelines cross Hungary and Slovenia before reaching Italy. Its planned capacity is 63 billion cubic metres (bcm) per year." ([EurActiv – Russia says South Stream project is over](#)) The murky business between the Macedonian and Russian government on whether there will be a connection pipe-line to Macedonia or not has failed thanks to other reasons. On December 1st 2014 Russia's President Vladimir Putin, allegedly surprising everyone from Russia to Brussels, announced that the planned project is dead and that instead there will be a new project that runs from underneath the Black Sea to Turkey and then it will connect to a hub at the Greek border. The planned capacity is 50 bcm. No details were provided about the further route of this 50 bcm of gas as neither Greece nor Turkey can consume that much. Some logic says it is still intended for the European market but how it will

get there is still largely unknown. This put the Balkan countries in frenzy, even Bulgaria which is a Member State since 2007, as well as Serbia which just started the negotiations for joining the EU.

The problem with gas in Europe is that it must be imported, oftentimes from countries with disputable human rights records. Switching from Russian to Azerbaijani gas for instance, which the EU is more favorable towards rather than the South Stream project – "Brussels and Washington saw the project as entrenching Moscow's energy stranglehold on Europe. Yet its appeal has waned as economic growth has stalled, and with Azeri Caspian gas due to land in Italy from 2020" ([EurActiv - Russia says South Stream project is over](#)) – does not solve the dependency issue. There might not be a solution to switch off of gas in the near future but while it is being used as a transition fuel strategies should be made on how to become energy stable and secure the supply for the consumers without involving too much 'high politics' into the picture.

Small countries such as Macedonia, Serbia, even Bulgaria as it was seen are usually most severely hurt by diplomatic 'wars' between the powers such as Rus-

sia, the US and the EU. Hence why, strategically planning the energy futures of these countries is very important. One of the alternatives almost not mentioned is having **decentralized energy (DE)** system also called **distributed or district energy**. It is usually defined as energy generated or stored by a variety of small, grid-connected devices, which are called **distributed energy resources (DER)** or distributed energy resource systems. The difference between these and the conventional systems that prevail in the world including the Balkans is that the second ones require conventional power stations like coal-fired power plants which are big, centralized and require transmitting grids for long distances in order to transmit the electricity to the final consumers who are usually not close to where the electricity is produced. In the DE systems however, the consumers and the electricity production facilities are close by.

This type of generation is locally placed, it reduces transmission losses which in today's systems is common as well as electricity thefts, and lowers carbon emissions, which all the countries are obliged to do anyhow. Security of supply is increased nationally as consumers do not have to share a supply or rely on relatively few, large and remote power stations, which on top pollute the environment. Other positive sides of this system are that on long term it can offer more competitive prices than

traditional energy. While initial installation costs may be higher, a special decentralized energy tariff creates more stable pricing. ([E.On – What is decentralized energy?](#))

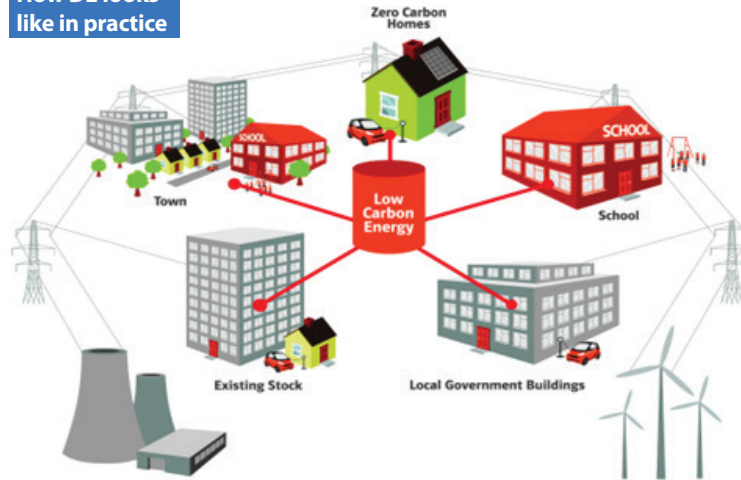
The main three conditions for this system to function are:

1. *Distributed Generation (DG)* – One of the benefits of decentralized systems is that the primary energy source is generally a renewable one such as wind, solar, biomass, biogas, hydro, geothermal, etc. and one that is locally available. However, this definition is not limiting, and depending on the case fossil fuels can also be used as the main energy source. Usually, for DER the plan is to have built CHP¹, since CHP plants improve energy efficiency. Hence, they are part of the DG, even though in some cases they may use fossil fuels.² CHP units are often used by local players such as municipalities, companies or households. Macedonia for

instance is divided in eight regions. Research is needed which RES is mostly present where, and plan the construction of power plants based on that.

2. *Demand Response (DR), Transmission and Distribution* - shifts energy loads around in time. As the point is to have locally produced and transmitted electricity, there is an issue

How DE looks like in practice



Source: E.on www.eonenergy.com

1 Combined heat and power.

2 It refers to gas mostly.

of what to do when there is low demand or high supply and how to shift that electricity. The distribution networks will have to evolve increasingly towards smart grids. Smart grids are usually defined as active and dynamic electricity networks where the smart grid functions as a facilitator for active end-users as opposed to the traditional passive top-down (uni-directional, producer-to-consumer) power system. The emergence of smart grids will involve significant changes in the way networks are operated.³ Currently there are no smart grids in the Balkans.

3. *Energy storage* - It will allow storing part of the energy produced by intermittent sources during low-consumption hours and feeding this energy back into the power system when most needed during peak hours. Pumped hydro and heat accumulators (as power users) are already in use today and Compressed air energy storage (CAES), hydrogen and electric vehicles are some of the most promising new technologies for future energy storage.⁴ Again most of these things are not in usage in the Balkans.

However, this is mostly theory for now, as energy systems created in the 20th century and still operating today rely al-

3 Source used for the three components: Directorate-General for Internal Policies, Policy Department A: Economic and Scientific Policy at the European Parliament, titled: Decentralized Energy Systems, published in June 2010. <http://www.europarl.europa.eu/document/activities/cont/201106/20110629ATT22897/20110629ATT22897EN.pdf>

4 Ibid.,

most exclusively on fossil fuels plus large hydro and nuclear where there is opportunity for that, as well as long transmission lines with little or no smart grids for transmitting that electricity. Hence why, the European Parliament's research paper titled Decentralized Energy Systems,⁵ puts emphasis on these barriers when it comes to considering switching to decentralized energy system:

- Increased reserve requirements due to intermittent and unplanned production;
- Need for forecasting;
- Excess production and energy storage;
- Need for ancillary services;
- System operation and range at transmission and distribution level;
- Security of supply;
- Upgrading network infrastructure
- Flexibility and aggregators.

However, not planning or at least considering 'breaking' the current energy systems into several small ones which works primarily for the consumers as they get locally produced and safe energy in today's world where conventional energy is becoming not only scarce but as always used as bargaining chip, is irresponsible towards the future generations who will have to deal with severe climate change issues and expensive energy.

5 Ibid.,