

From the scenarios presented above, some conclusions can be highlighted. Firstly, the participants imagined a dystopian vision which represent BAU; a sort of projection of the current situation (see also Section 2) in slightly less than a decade. This is a vision that all groups wanted to avoid at all costs. Secondly, another three diverse visions (similar in some aspects) have been imagined for 2040 in Gran Canaria: they are **Integrated, Sustainable Society and Action**. All these visions and scenarios offer potentially better future visions than the dystopic one, even if different groups imagined the drivers of change in different ways, emphasising different aspects of the same dimension. For example, the inclusive character discussed in **Sustainable Society** point to societal engagement as an engine of change. Political will appeared to be more relevant in the action scenario, reflecting the need for better (climate) governance. Stakeholder participation reaches higher levels in **Sustainable Society**, thanks to the collaboration among public and private stakeholders. The deployment of renewable energies is strongly considered in both the **Integrated** and **Action** scenarios as a way to mitigate climate change and gain independence from external energy sources. Natural water-filtering systems are adopted especially in the scenarios of integrated management and sustainable society as a key source of water for crop production. Lastly, it seems that all groups might agree on the development of and support for a circular economy, even if the details of what such idea is was not really discussed.

As explained above, the dry walks activity was illustrative of a participatory style of governance and therefore the visions described in this section, even if resulting from a collective reflection exercise cannot be seen as representative visions for Gran Canaria. However, they have been useful to make visible some invisible imaginations among the participants. They helped participants to reflect and negotiate among each other on a structured way different insights, concerns and tensions, and what needs to be changed in the present to attain or not plausible or implausible futures. Hence, besides being an inspiration to run a proper inclusive process, also concrete actions have to be proposed and implemented to achieve desirable futures. In the following section, many of the participants actually attempt to do so through what they called a “LOGIC proposal for action”.

4.6 A LOGIC proposal for action

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In the following sections, a list of possible LOGIC (no water **LO**sses, wastewater re**Ge**nerat**Io**n and de**Ca**rbonised desalination) actions to enhance the resilience of the food–water–energy nexus in a context of increasing flood risk is presented.

4.6.1 Agriculture sector

The following actions are based on Section 4.2.

1. It is necessary to improve water treatment, so that these waters with nutrients, but lower sodium absorption ratio levels, can reach farmers.
2. It is necessary to guarantee irrigation water to farmers in all agricultural regions and unify water prices for irrigation.
3. It would be helpful to analyse the areas of Gran Canaria with agricultural potential that present difficulties in accessing water resources. The possible acquisition by the council's Water Planning Agency of certain private wells located in strategic places should be evaluated in order to improve water irrigation management.
4. It is important to expand the distribution network of treated water to ensure that, at least, water supply is guaranteed at reasonable prices.
5. A professional farmer should not spend more than EUR 1 500 per hectare per year in water costs for irrigation, implying a price of EUR 0.25/m³.

4.6.2 Desalination and the use of renewable energies in Gran Canaria

These actions are based on Section 4.3.

1. It would be helpful to have an updated georeferenced census of desalination plants on the islands, listing their water capacity and production, power demand and energy consumption.
2. The island should have coregulation related to desalination implementation (optimum energy consumption, renewable energy penetration, minimum environmental impact, etc.) and recommendations for the operators (led by the Water Planning of Gran Canaria).
3. Further research is needed for better operational understanding of isolated desalination plants or large-scale plants using renewables (performance, costs and energy backup).
4. It is necessary to go from the current installed capacity for desalination of 300 000 m³/day to 420 000 m³/day (Calero, 2018). Making these decisions is a matter of political will (not technical ability) as well as a question of changing specific regulations for the good of adaptation and mitigation to climate change in such a manner that the island's agriculture can be safeguarded from extreme climate events.
5. The use of renewable energies should be obligatory to desalinate water in the Canary Islands given the potential of sun and wind resources. A positive net balance should be the goal.
6. The existing legislation on renewables should deal with particular cases of self-consumption so as to produce water either for public supply or for agriculture by means of desalination.

4.6.3 Wastewater management

Based on Section 4.4, the following actions should be implemented ⁽¹⁷⁾.

1. Raise awareness and promote water reuse.
2. Improve the image of reuse.
3. Promote and build confidence in the reuse of reclaimed water.
4. Provide training/information on good irrigation practices.
5. Establish technologies for regeneration. Water treatment technologies must provide water to end users with enough quality (safe for human health and the environment but also agronomically adequate in the long term) and at affordable prices (economically feasible but avoiding socioeconomic and legal and/or institutional constraints).
6. Adapt uses and quality control to different scales, and ensure that they are economically viable and capable of producing effluents of sufficient quality for reuse.

⁽¹⁷⁾ <http://adaptares.com/es/>

7. Unite research efforts in the area of regeneration and reuse technologies. There are not enough long-term studies focused on this issue. Therefore, it is necessary to develop *in situ* experimental plots to evaluate the changes in soils, from the physical, chemical and biodiversity points of view, as well as the effects of reclaimed water use on crops' yields and on their disease tolerance.
8. Promote demonstration projects for reuse.
9. Regarding economic considerations, increase the social price of desalinated water production (currently EUR 0.59-0.65/m³). It attracts a grant from the Council of Gran Canaria, which does not include the total cost of the desalination process or the pumping costs, since mountainous areas are more difficult to supply with desalted water. Comparing it with reclaimed water costs (EUR 0.20/m³) shows that there is an advantage to *in situ* reuse. Reclaimed water is a more sustainable option for agricultural production but some institutional decisions are needed to improve RW capacity to increase its consumption (Palacios-Díaz et al., 2008b).
10. Introduce a regulation on minimum quality requirements for reused water in agricultural irrigation and aquifer recharge, to encourage efficient resource use and reduce pressure on the water environment, providing clarity, coherence and predictability to market operators (Alcalde-Sanz and Gawlik, 2017).

4.6.4 Water losses

According to the European Environment Agency (EEA), water losses – which include production losses (abstraction and treatment processes), distribution losses (much larger than production losses), unbilled consumption (e.g. firefighting) and apparent losses (meter inaccuracies and illegal use of water) – should be minimised (EEA, 2014). Therefore, water loss control is one of the key actions to reduce the impact of unsustainable water management (EEA, 2009, 2018). However, especial attention should be paid to distribution losses (EEA, 2014). According to the EEA, two kinds of actions could be implemented, i.e. technological developments and fiscal policies:

1. The technological developments include network improvement by means of preventative maintenance and network renewal (EEA, 2009, 2014). New technologies are able to detect leaks, such as sensors that use noise generated to locate the leak in the network, or ground radar devices to identify disturbed ground or cavities around the pipe, as well as tracer gas and devices that use radio signals to detect flowing water (EEA, 2009).
2. Fiscally, fines should be imposed when agreed reduction rates are not met (EEA, 2009).

4.7 Integrating adaptation actions into the Covenant of Mayors of Gran Canaria

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The Council of Gran Canaria, through the Insular Council of Energy, has been the coordinator of the Covenant of Mayors on the island since September 2016, providing technical and strategic assistance to the signatory municipalities for the development, implementation and control of their sustainable energy and climate action plans (SECAPs), including the baseline emission inventory (BEI) and the risk and vulnerability assessment (RVA). The council also provides financial support to the signatories either in the form of direct support, such as grants, or by assigning personnel for technical assistance, sharing experiences and knowledge among the signatories of the covenant (existing and potential).

Currently, 10 municipalities of Gran Canaria (Agüimes, Firgas, Gáldar, Ingenio, Moya, Santa Brígida, Tejeda, Telde, Valleseco, Valsequillo de Gran Canaria) have completed their SECAPs, which are under review. In October 2019, 10 other municipalities became part of the initiative (Agaete, La Villa de San Nicolás, Artenara, Arucas, Mogán, San Bartolomé de Tirajana, Santa Lucía de Tirajana, Santa María de Guía de Gran Canaria, Teror, Vega de San Mateo). The municipality of Las Palmas de Gran Canaria is evaluating how to collaborate with the Local Energy Agency of Las Palmas de Gran Canaria on the preparation of its action plan.

The SECAP is a key document that shows how the signatories of the Covenant of Mayors will fulfil a commitment by a scheduled time limit. This plan uses the results obtained from the reference emissions