



L-Università ta' Malta  
Institute of Earth Systems

---

**Institute of Earth Systems** feedback on the  
**National Strategy for the Environment 2050**

---

October 2022

## Introduction

This document sets forth the official feedback being submitted in October 2022 by the Institute of Earth Systems (IES) at the University of Malta (UM) in response to the public consultation draft of the **National Strategy for the Environment 2050** drawn up by the Environment and Resources Authority (ERA).

The areas of expertise of the academics whose contributions are included within this document are as follows:

- Aerobiology
- Air quality
- Biodiversity conservation
- Climatology
- Earth observation
- Ecology
- Environmental planning
- Human-nature relationships
- Hydrometry
- Meteorology
- Non-conventional water resources
- Palynology and palaeoenvironmental reconstruction
- Urban agriculture
- Waste management
- Water resource management

## General comments

The Strategy is a step in the right direction and is certainly much needed, given the sustained marginalisation of environmental concerns in the local context. We therefore applaud all involved in launching this initiative and have full faith in the good intentions behind it, while acknowledging that there is the necessary technical expertise within ERA to implement it. However, and as noted in the Strategy's own Foreword, this will be useless if no real political commitment to its implementation exists beyond ERA itself. Although as noted, "a healthy environment is both our duty and our right", the health of the environment has not been given its due priority at national level and remains largely at the mercy of a land-use planning system that tends to prioritise development. The directions proposed here are therefore only a partial solution and need to be accompanied by deep-seated reform of the planning system and by a truly pan-governmental and cross-sectoral approach to enhanced environmental sustainability. Without this, it is doubtful that the strategy will achieve its aim of "an improved quality of life that endorses environmental limits".

While it is positive to see that the NSE has been developed in consultation and collaboration with several stakeholders, it is also somewhat disappointing to note that academic representation was limited to the Faculty of Social Wellbeing at the University of Malta and MCAST, excluding all other UM entities that are directly engaged in research and capacity-building activities relevant to the environment and to priority areas of this strategy – notably including this Institute, various departments of the Faculty of Science, and the Institute for Sustainable Development and Climate Change. It is also disappointing that UM is not recognised as a key player for a number of important objectives in which it can play a significant role. The Institute of Earth Systems affirms its strong support and willingness to contribute implementation of this Strategy and other related initiatives.

Human wellbeing is merely one aspect of the myriad of elements that constitute 'environment'. The interrelations and interconnectedness between biotic and abiotic components, the sphere of influences by global physical cycles on the natural and semi-natural environment, and the vast array of wide-ranging issues that require far more urgent attention by far eclipse the meagre focus on human wellbeing. That is, of course, if one has a real and deep understanding of environmental processes and dynamics, and that the scope of this exercise is not limited to paying lip service to Malta's obligations on the EU stage. A focus on human wellbeing mirrors the now relatively outmoded concepts that were promoted in the 1980s and 1990s in international fora and global strategies, which at the time were relevant and crucially important. However, in the decades following those early days of the emerging new discipline of environmental management, several critical thresholds and global environmental limits have since been surpassed and various tipping points, including those related to climate and forest cover, have since been crossed.

While it may be argued that infinitesimal Malta can do little on the world stage but maintain a watchful eye on events as they unfold, there is actually much that can and should be done to counter the unrestrained obliteration of environmental resources through 'unplanned' and reckless development at the local level. Fragmentation is largely to blame for biodiversity loss, but the tangible isolation of habitat through physical development is not the sole reason for the loss of ecological connectivity. Shadowing, aerosol chemical pesticides, and excessive artificial lighting are also among the leading tangible causes for relegating habitats and biota into *ecological refugia* which consequently become threatened with genetic unviability as local populations of species reach levels below minimum viable population (MVP) size. Of course, conservation of biological diversity should not be restricted to the protection of perceived important species and their habitats. More often than not, funds are spent on flagship (charismatic) species, while crucially important keystone species are neglected entirely. Furthermore, semi-natural areas which have not thus far been recognised for their significance in supporting biodiversity (*sensu lato*) should also be safeguarded, in recognition of the roles they play, both direct (through provision of habitat and resources) and indirect (by forming part of a watershed which in turn has an influence on the physico-chemical structure and function of the ecosystem).

Open green spaces are vital elements in the context of both land-use planning and conservation due to the obvious benefits they provide to nature and associated processes, and to human wellbeing. Regrettably, the critically important subject of environmental psychology has been completely neglected in local planning legislation, notwithstanding the fanciful logos used over the years to describe the bogus *raison d'être* of Malta's Planning Authority. Given the level and quality of urbanisation in the Maltese Islands (also, now, including Gozo), what is needed goes beyond the scientific monitoring of chemical and other parameters, and the importance of considering the psychological impact of urban density and resultant shade (perpetual gloominess impacting indoor environments and streetscapes), traffic congestion, and a lack of clean fresh air, open space, and wooded areas (for recreation and leisure) cannot be overstated. Consequently, irreversible changes require urgent **action** (as opposed to 'attention') through meaningful **engagement**, based on **sound science** (as opposed to 'political convenience').

## Strategic Goal 1: Clean air for wellbeing, healthy humans and thriving nature

### “What we’ve achieved”

- While the shift to LNG at the Delimara Power Station has contributed to decreasing emissions of SO<sub>2</sub>, NO<sub>2</sub> and PM amongst others, its effect on urban air quality has been insignificant. Furthermore, the claims made regarding the environmental benefits to air quality of “road infrastructure improvements” are, in the absence of any data showing otherwise, completely unfounded, particularly in connection with the road widening schemes implemented in recent years. Research carried out abroad shows that road widening does not, in fact, improve air quality.

### “Where we want to go”

- As regards the issue of the effects of development applications on air quality, it is about time that developments which are predicted to result in exceedances of the limit values in S.L.549.59 start to be opposed. Failing to object to such developments, when this legislation obliges Malta to stay within these limit values, is nonsensical. In addition, asking the developer for a financial contribution or for an unenforceable “green” travel plan while at the same time green-lighting problematic developments is the epitome of malpractice, and is tantamount to taking the residents of the affected areas for a ride. Unless this issue is dealt with, the notion that the Strategic Plan for the Environment and Development (SPED) will ever support “the need to integrate pollution hotspots in urban planning” is delusory.
- The use of the term “target levels” is vague, and fails to specify which target level is being referring to. The EU limit values, for instance, are no longer considered to be sufficiently protective of human health. The NSE should include an explicit objective to achieve 2021 Air Quality Guidelines and should aim at achieving these targets by 2035. A staged approach to reaching these targets could be adopted.

### Strategic Objective 1.1

- Rather than linking road licence fees solely to kilometrage, we suggest linking road licences to the specific emissions of the relevant pollutants emitted per kilometre driven, e.g. g/km of NO<sub>x</sub> /PM<sub>2,5</sub> for diesel vehicles and g/km of benzene for petrol vehicles. There should also be a clear aim of removing the older more polluting heavy-duty vehicles (HDVs) from the road.
- While most of the initiatives considered are laudable, a behavioural change will not be achieved unless motorists are financially disincentivised from using their private cars in certain parts of the country and during certain times. It is disappointing that there is no mention of the introduction of congestion charging, which research shows to be effective.
- The proposal to use shore-to ship (STS) electricity facilities as a means of reducing air pollution emissions in the inner harbour area fails to take into account the two separate factors that need to be considered, namely the availability of STS facilities at the harbour and the capability of the ships berthed there to connect to these facilities. Because of the associated costs, ship owners will simply not carry out the necessary retrofitting to ensure their vessels can connect to STS facilities unless they are “forced” to. This measure will therefore only serve as an expensive PR exercise for the government unless the availability of STS electricity facilities is coupled with legislation requiring ships to use cleaner fuel or introducing taxation of emissions.

- This Strategic Objective fails to mention a cut-off date for the importation of conventional diesel and petrol internal combustion engine (ICE) vehicles. With the UK planning to ban ICE vehicles by 2030, it will anyway no longer be viable for car manufacturers to produce right-hand drive ICE vehicles compatible with European standards just for the Irish and Maltese markets.
- The Strategy rightly points out that a shift to electric vehicles (EVs) will not fully address the levels of particulate matter (PM) emissions. We therefore suggest incentivising alternative propulsion systems such as fuel cells and hydrogen powered vehicles, rather than focussing exclusively on EVs.
- While this Strategic Objective's goal of 'sustainable mobility' is very much needed and there are potential transport alternatives to be explored, the aim of reducing 'the need to travel' is much harder to achieve; it is therefore suggested that the initial focus should be on greener transport alternatives.

#### Strategic Objective 1.4

- Despite the fact that studying the population's exposure through the use of "high-res dispersion modelling techniques" is interesting, there is nothing about reducing hotspots in the description of how this Strategic Objective will be achieved. Once intense traffic flows have been identified as the problem, the solution has to be curbing these flows, and this should be done through fiscal measures i.e. making travelling through these hotspots expensive for motorists.

#### Strategic Objective 1.5

- In view of this Strategic Objective's stated aim of linking air quality to nature, heavy metals such as cadmium, lead and mercury should also be considered.

#### Strategic Objective 1.7

- Malta should pro-actively monitor for pollutants other than those mandated by the Ambient Air Quality Directive (AAQD), such as black/elemental carbon (BC/EC) and ultra-fine particles (UFPs). This would help strengthen Malta's position during negotiations leading to the overhaul of the AAQD.

#### Strategic Objective 1.9

- While in agreement with most of what is included in this section, it is worth pointing out that data already exists on environmental levels of perchlorate, the oxidiser used in fireworks, as well as on its potential health effects. There is therefore no reason to delay taking bold policy action on this front, and continuing to expose the public to a potential health hazard for the enjoyment of a few enthusiasts should be completely unacceptable.
- A consideration within this Strategic Objective should be the avoidance within future planting schemes of species which are known to have pollen allergens, as a measure to potentially reduce impacts on quality of life and hospital admissions.

## Strategic Goal 2: A quality environment for liveable towns and villages, conducive to healthy living

### Strategic Objective 2.1

- The proposed creation of open spaces is much needed, given that the lack of such spaces repeatedly emerges in research as a point of strong dissatisfaction amongst local residents, and also bearing in mind the critical importance of access to such spaces for a variety of mental and physical health benefits. However, it needs to be ensured that open spaces are strategically and clearly identified for the long-term, both in terms of location and function - for example, through updating of the outdated Local Plans. It also needs to be ensured that at least a majority of open spaces are actually accessible to local communities as such, i.e. that they are not roundabouts or traffic islands. They also need to be robustly safeguarded, with appropriate resources allocated to their maintenance. Local Councils should be properly empowered to take an active role in the management of such spaces, and it must be ensured that there is clear accountability for their maintenance. It has unfortunately been characteristic of many initiatives in the Maltese Islands that initial implementation is not followed by adequate maintenance, with the result that spaces become degraded within a few years.
- Given the dearth of nature spaces in the Maltese Islands, it is of some concern to read “where possible, nature-based solutions and green infrastructure will be integrated in these spaces...” and that “some open spaces may offer further opportunity for the integration of green infrastructure in urban living spaces”. The pattern with most local urban open spaces has been extensive hard landscaping, with mere pockets of nature that are often poorly suited and poorly maintained. There is a very wide spectrum of possible nature-based solutions that can be incorporated into different urban open spaces, and the prioritisation of nature should be an absolute priority for *all* such spaces. This is especially critical in view of *Strategic Objective 2.2 - increasing communities’ access to nature*. As noted, ease of access to nature is tied to myriad physical and mental health benefits, as well as to people’s nature connectedness. Increasing access to nature should be a critical priority for Malta, more so than elsewhere, particularly considering Malta’s very high rate of urban cover and the fact that it is one of the worst European performers with regard to providing access to nature, with no tangible signs of improvement. Consider how distant Malta’s current situation is from the 3/30/300 target of the Nature-Based Solutions Institute - a minimum of 3 trees visible from every home, 30% tree canopy cover in every neighbourhood, and no distance greater than 300 metres from the nearest public park or green space for every citizen.
- More effective streetscaping could contribute to this strategic objective. Local councils, for example, could be encouraged to trial small-scale ‘pop-up’ gardens within streets, with the potential of making these more permanent following consultation with residents.

### Strategic Objective 2.2

- The notion of creating and maintaining urbanistic green sanctuaries within synanthropic environments and landscapes is long-standing, and among the best-known examples in which nature and people co-occur, as a result of mindful design and architectural endeavour, one finds Central Park in New York and the Royal Botanical Gardens at Sydney Harbour. The considerable public attraction of such ‘urban green lungs’, located close to or within densely populated conurbations, demonstrates the social worthiness and recreational merit of open green spaces. A carefully executed landscaping design and planting configuration has the potential of achieving both aesthetic and visual harmony within urbanised regions. Moreover, apart from affording a degree of conservation usefulness for biodiversity through the creation of semi-natural woodland,

such green lungs could also provide a significant measure of buffering in relation to the influence of suburbia. Patches of open green spaces across our highly urbanised islands can also provide an important linkage or 'stepping stone' effect (i.e. a functional network of greenways) across the landscape for vagile biodiversity, including avifauna and invertebrate pollinators, which would benefit both people and biota in a variety of ways.

- It is all very well to read that "existing gardens and green spaces" will be protected. There is, however, no detail of how this will be done. This is therefore far from convincing, particularly as such spaces are, even now, under a constant onslaught from the threat of development. It should be noted that the threat to green spaces does not normally stem from ERA but from decisions taken by the Planning Authority.
- The IES fully supports the proposed involvement of citizens in initiatives such as community gardens and tree planting; our research has shown a strong interest amongst the public in such practices. It is likewise very encouraging to see the proposed prioritisation of increased tree canopy cover. We again emphasize the importance of long-term maintenance, beyond the initial planting.

### Strategic Objective 2.3

- While this Strategic Objective mentions traffic "calming" and "management" measures, there is scope for further ambition in order to reclaim the streets, particularly in the town/village cores. The key to achieving this objective is the introduction of the concept of limited traffic zones/zero traffic zones within urban cores. Towns should be designed around the needs of the residents rather than aiming to facilitate the life of motorists.
- As regards temporary road closures in the areas around schools as a safety measure, this means that there are no limitations on car-use in these areas during the rest of the school day. This results *inter alia* in social injustice due to the fact that most public schools are in the centres of their respective towns. The dense traffic in town centres during school hours means that pupils are exposed to the resulting high levels of pollution during their break time and PE sessions.

### Strategic Objective 2.4

- This Strategic Objective is aimed at improving liveability by enhancing cleanliness and maintenance, with no mention of promoting the introduction of green roofs, windows and balconies. The latter help to raise awareness among the general public of the importance of nature even within urban areas, and would also improve the overall quality of the urban environment. It is therefore recommended that local councils and central government incentivise the greening of towns and villages, especially in view of today's reality of the skyline of towns and villages being dominated by increasing numbers of concrete structures and high storey buildings.

### Strategic Objective 2.5

- As regards exposure to dust from construction activity, it should be mandatory for construction, demolition and excavation sites to be covered with the appropriate netting, while all works generating dust should be carried out using equipment fitted with vacuum suction. Any good intentions will be pointless unless these measures are rigorously enforced.

- While we agree with the need to curb noise from construction sites, this Strategic Objective fails to mention entertainment noise, a current bone of contention particularly in Valletta. This issue could be addressed through introducing the much touted and long-promised “Noise Legislation”. It is very positive to see light pollution recognised as an emerging concern, and the proposed measures would go a long way towards addressing this issue. It is, however, critical that the proposed national policy will indeed be ‘binding’ and that it can be effectively enforced through introducing the much touted and long-promised noise legislation discussed in this [Times of Malta article](#) from 2019.

### Strategic Objective 2.6

- This Strategic Objective is in line with SO2.4; it is felt that the greening of towns and villages is better tackled from a community perspective rather than by individuals.

### Strategic Objective 2.7

- While in principle there may be some benefits from the proposed index of citizen wellbeing in relation to the sustainability of the environment, it is doubtful whether this is truly the best use of available funding, given that the strategy notes that “required funding will be made available”. Linkages between wellbeing and environmental sustainability have been extensively researched for decades the world over; there is no need to reinvent the wheel. It would hardly need major investment to identify which environmental burdens are currently reducing liveability and quality of life locally - plenty of insights on this already emerge from even limited local research. What is required is true political will to address these aspects, which are invariably tied to persistent development pressures and attendant nuisances, and to the lack of access to quality green spaces.
- While this Strategic Objective encourages localities to “pursue environmental sustainability”, it does not recognise that local authorities are often hamstrung by decisions taken by the Planning Authority. The proposed initiatives – such as enhancing mobility, local open markets, etc. - are all well and good but are of marginal significance when pitted against planning decisions that fly in the face of any sustainability discourse.



## **Strategic Goal 3: Biodiversity valued, conserved, restored and sustainably used for the benefit of our nature, people and climate**

### **Strategic Objective 3.1**

- This Strategic Objective lists various pressures and threats to biodiversity, and the proposed measures are all very positive. However, it is far from convincing to read that “efforts will also continue to be made to adopt an effective regulatory regime and designate specialist enforcement structures to assist law enforcement bodies to detect and prosecute bird and other wildlife crime”. Such a regulatory regime and enforcement structures have existed for long enough to allow a determination of their effectiveness, or lack thereof. This objective therefore falls short of specifically addressing the issues that have thus far precluded the effective regulation and prosecution of wildlife crime.
- On paper, the measures within this Strategic Objective are highly commendable. In practice, however, as in many other situations/obligations/proposed measures, ERA will continue to find itself disadvantaged by the fact that in reality the organisation is an ‘authority’ only in name and not in function. For as long as it remains within the command structure of the Ministry, where functionaries of the political apparatus continue to wield power on micromanagement decisions, both the entity and its professional staff are rendered less effective and are, quite frankly, reduced to an appendage of a government department rather than the real ‘authority’ it was originally established to be. An environmental agency cannot truly function under the current management framework as a national watchdog whose remit concerns the environment in its broadest sense.
- The Strategic Objective states that “assessments of current and projected impacts of climate change will be undertaken” - this is certainly very ambitious given that there is currently no national observatory that has monitored, is monitoring or plans to continue monitoring these impacts. Predicting ‘projected’ local impacts would require a knowledge-based infrastructure that is currently non-existent, and raises the question of how we could produce knowledge about the impacts of climate change on a local scale given the scarcity of research in this area. The second problem is one of policy-building, in terms of the difficulties of developing policies that have social justice outcomes for residents, given that the degree of environmental change varies from one locality to another. The challenge for climate change mitigation will be to meaningfully address the question of what kinds of social justice outcomes are worth prioritising, with whom, and in what spatial context. The Strategy does not address the need for capacity building aimed at examining either current or future scenarios.

### **Strategic Objective 3.2**

- This is again a noble objective and we particularly welcome the proposal to diversify approaches through establishment of trusts, public-private partnerships, and other measures to diversify financing. However, it must also be recognised that existing conservation objectives and measures for protected areas are, from the public perspective, far from convincing when considering the state of areas like Comino which, despite their designated status, fall far short of even basic management expectations.
- It is all well and good to establish public-private partnerships, and to involve eNGOs in the running of protected areas. However, appropriate mechanisms for scrutiny of issues such as management practices, the use of funds and other resources, any modification of the terrain, species introductions and training of staff need to be considered. A management review procedure, independent of both government and the private sector, should be established with

the authority to audit management plans and practices at any point, with findings accessible to the Minister concerned and to the relevant Parliamentary Standing Committee.

- The strategy should also consider formalising arrangements for protected area management effectiveness (PAME) evaluations, which should be fundamental for ensuring adaptive and responsive management of these sites.

### Strategic Objective 3.3

- It is very positive to see ecosystem restoration recognised as a key Strategic Objective, and there is certainly much scope for this. While it is noted that “guidance will be developed” for this purpose, it must be recognised that there is a need for considerable further research in this area, since the success of restoration actions is heavily context-dependent and local research remains limited. The University of Malta would be a logical partner for this purpose. Such initiatives would also require dedicated funding and the commitment and allocation of resources to ongoing maintenance of these sites. Furthermore, the constraints imposed by a fragmented land registration system would also need to be addressed, in order to allow for effective and efficient engagement with landowners.
- Restoration ecology and the closely aligned area of corridor ecology comprise specialised interdisciplinary areas of landscape ecology and conservation biology that require the involvement of a host of specialisms when considering any practical interventions. Unfortunately, the planting of trees, even if indigenous, has often been construed and presented as the main effort in “ecological restoration”, while the real notion of restoration ecology is far more complex and involves numerous parameters such as phytosociology, ecological context, designs based on existing geomorphology and hydrology, planting ratios, historical records, etc. In addition, restoration initiatives and conservation practices should actively consider grasslands, an exceedingly important habitat for a vast suite of invertebrates, reptiles, birds and terrestrial micro-mammals.

### Strategic Objective 3.4

- This Strategic Objective, notes that “urban greening will be promoted, mainstreamed and mandated in national policy to increase its uptake, aided by good governance and management approaches”, also noting that “existing green spaces within the urban fabric will be protected through urban planning policies”. This is somewhat ironic, given that neither policy nor governance/management approaches have thus far done much to safeguard existing urban green areas. In the absence of further tangible detail of how this will be done, this point is therefore far from convincing.
- There is much scope for green infrastructure to be promoted through urban planning policies. However, it needs to be ensured that planning conditions ensure not only the initial implementation but also long-the-term maintenance of any implemented green infrastructure.
- The irrigation water requirement must be considered when designing the various forms of green infrastructure, particularly green roofs and walls. The design should, in the first instance, “not require constant maintenance so as to be sustainable and not resource-intensive, such as by landscaping using native flora with lower irrigation requirements” (SO2.1). Rainwater harvesting should be included within the design, with the use (and rehabilitation where necessary) of existing reservoirs wherever these are present. The source of irrigation water should be regulated, and Green Public Procurement (GPP) criteria should include the source of irrigation water for all public

greening initiatives. Trucked water supplies (water bowsers) should be sourced from either reclaimed water (such as New Water), municipal water supply (mains water) or from an allocation of water from one of the perched aquifers (which cannot be over abstracted). Water from the Mean Sea-Level Aquifers (MSLA) should not be utilised for public greening initiatives as this would further strain the delicate water balance of the MSLA, leading to seawater intrusion.

### **Strategic Objective 3.6**

- While there is certainly strong scope for “effective and efficient mechanisms...to inform and raise awareness among citizens on the benefits from the services of our natural capital...and a demand in appreciating and valuing nature”, this Strategic Objective does not adequately recognise that such demand cannot be merely taught. There is substantial evidence that appreciation of and demand for nature stem from a strong sense of nature connectedness that can only be fostered by frequent and quality exposure to nature, particularly during childhood. Strong nature connectedness is also linked to stronger tendencies to engage in pro-environmental behaviours.
- The link between nature and health is a major research priority at the European level, and while it is true that this link has not been firmly established locally, there exists substantial evidence from wider afield attesting to this link. The proposed studies on which aspects of nature are most beneficial to health are relevant and needed, as is an understanding of the relative importance of greenness quantity vs. quality, of the relevant contributions of blue vs. green spaces, and of causal mechanisms that contribute to such links. Such studies need to be embedded within the context of related research initiatives currently ongoing at European scale. They would also require a transdisciplinary research approach involving several relevant institutions, including the University of Malta and local health entities.
- The objective states that “regular assessment of the populations’ subjective wellbeing and physical and mental health derived from spending time in nature will further encourage citizens to be active in the protection of nature”. This is a somewhat simplistic view of what in reality are complex pathways that ultimately encourage individuals to engage in nature-friendly behaviours.

### **Strategic Objective 3.8**

- The proposed mainstreaming of nature-based learning in schools is a critical priority. However, this needs to go beyond the establishment of community gardens in schools, and needs to ensure that exposure to nature is embedded in the core curriculum, thus providing for regular exposure to nature for all children. It must also be recognised that the small and heavily built-up footprint of several local schools presents considerable challenges in implementing such nature-based approaches, highlighting the need for strong cross-sectoral support to the valuable work already being undertaken by eNGOs.
- Within this goal, and perhaps a number of others, we recommend the inclusion of citizen science projects as well as a community-led approach.

## Strategic Goal 4: Responsible and efficient resource use that reflects the value of raw and waste materials in support of zero waste to landfill

### “What we’ve achieved”

- This section highlights the fact that progress in achieving the required behavioural change has been slow, with a decrease between 2017 and 2019 in landfilled MSW from mixed bags of 17.5% and concomitant increases of 2.9% in the recyclables bag and 7.2% in the organics bag. It is commendable that the feasibility of introducing systems that penalise bad practices, such as Pay-As-You-Throw schemes for mixed waste, is being considered.

### Strategic Objective 4.1

- The government should incentivise the transition to service purchase as opposed to product purchase, particularly for products such as consumer electronics which have relatively short lifespans due to the constant placing on the market of newer models. While some suppliers do currently offer leasing schemes, there is scope for making these schemes more advantageous to customers and for increasing their market penetration. One idea to explore is the granting of tax credits to suppliers offering leasing schemes.
- Research on Industrial Symbiosis (IS), particularly in the context of the Maltese manufacturing industry, should be actively promoted. This research should aim at building industrial estates around the principles of IS, given the difficulties of implementing these principles *a posteriori*.
- Dumping at sea of construction and demolition waste should be strongly discouraged by making it prohibitively expensive.

### Strategic Objective 4.2

- There is indeed much scope for wider involvement of industry in shifting production and consumption practices, and the measures outlined here are all positive. It is especially encouraging to see consideration of novel approaches like servicizing/Product as a Service (PaaS). However, the details of how the various measures will be implemented is sorely lacking, which makes the strategy less convincing, particularly when considering the substantial implementation challenges involved. For example, Malta’s small scale presents obvious challenges to circularity and industry symbiosis, and there is no indication of how these will be addressed. Likewise, vague language, e.g. “businesses will be encouraged...”, is not especially convincing.

### Strategic Objective 4.3

- This measure outlines several positive actions, including efforts to address food waste. A number of small-scale studies concerning food waste in Malta have been conducted and their findings should be duly considered. In addition to targeting consumers, food waste-related initiatives should also give specific attention to the role that supermarkets can play, and to the formalisation and regulation of alternative pathways for unsold items. We strongly suggest banning the throwing away of food by supermarkets along the lines of recent French legislation which made the country the first in the world to ban supermarkets from throwing away or destroying unsold food, forcing them instead to donate it to charities and food banks.
- Measures to facilitate waste separation ought to be strongly encouraged, such as the more widespread provision of waste separation bins across both public and private spaces. However, it

also needs to be ensured that there is faith by the public in the waste management system; a few reported instances of waste collectors mixing waste from different sources have caused untold damage in terms of people losing confidence in the system and consequently not bothering with further separation.

- The strategy notes the importance of regulating disposal of pharmaceutical wastes. This is indeed critical, and related research at the University of Malta has already identified issues with the disposal of such waste. In addition to educational efforts, which need to address both correct disposal methods and the consequences of irresponsible disposal, it is recommended that *all* pharmacies accept pharmaceutical wastes for disposal, so as to make it easier for consumers to dispose of such products correctly.

#### Strategic Objective 4.4

- It goes without saying that the quality of the waste in both the recyclables bag and the organics bag needs to be improved. It is disconcerting to see that the Malta North plant is unable to produce agricultural grade compost due to the carelessness of some residents. It is also disconcerting to see that only a low percentage of waste in the recyclables bag is of good quality due to problems of contamination. We therefore suggest the introduction of a system which would enable the identification of residents who are handling these waste streams carelessly. This can be achieved by, for example, obliging residents to attach to their waste bag a sticker bearing a QR code containing their contact details, thus facilitating enforcement of waste separation at source.

#### Strategic Objective 4.5

- As regards public procurement, specifications for government-issued tenders should include requirements such as standards for repairability, longer term warranties, and a preference for consumables such as printer toners that can easily be refilled and reused.

## Strategic Goal 5: Land resources managed to sustain natural functions and increase resilience to climate change

The impacts of climate change are among Malta's most pressing environmental issues and need to be addressed with urgency. Following the declaration of a climate emergency in 2019, the expectation was that the authorities would raise awareness about this issue in order to elicit action from stakeholders including the government, industry, policymakers, and individuals. The declaration by the government of the climate crisis as a national emergency should have unlocked administrative powers to introduce better socio-economic and environmental policies leading to significant and concrete actions. Unfortunately, the expected response failed to materialise.

The NSE's scope is too horizontal, and the document neglects to discuss, within the various strategic goals, the need of creating resilience to climate change impacts in a number of important socio-economic sectors such as health, ecosystem, agriculture, fisheries, water supply, waste, coastal environments, and infrastructure.

References to the Strategic Plan for the Environment and Planning (SPED) as a "valuable policy effort in land governance" are somewhat ironic given the state of development in the country. Unlike the previous Structure Plan, the SPED outlines general goals in terms that are vague enough to allow open interpretation. It has failed completely in its brief to contribute to improved land governance, evidence of which is the fragmented approach to land use planning, seemingly without any overarching sense of long-term sustainability or quality of life. While it is very positive that the extent of protected land has increased, this in no way compensates for the poor urban planning that today characterises much of the urban fabric and that poses a constant threat to wellbeing and quality of life, not just because of the dubious quality of some new constructions but also because of the constant threat of loss of privacy, loss of views, overcrowding, and the general loss of open/green spaces and pleasant living environments. Nor does this statistic account for the fact that, as noted earlier, several of these protected sites are in a far from optimal state. If there is to be any improvement, a first step has to be recognising the abject failures of the land use planning system we have implemented thus far, rather than claiming plaudits for policies that have been ineffective at best and harmful at worst.

### Strategic Objective 5.1

- The proposed sequential approach to guiding development will work only if there are no loopholes. The mention of "land take up in the rural area" as a "last resort after other options have shown to be not possible to implement in practice and applicable only in exceptional circumstances of urgent and compelling national need" is worrying because past experience suggests that such decisions are more likely to be based on political than technical considerations. As long as planning decisions remain the remit of political appointees (under any government), such clauses constitute loopholes that will likely be exploited to the detriment of the common good. If ERA truly wants to see efficient land use, then it needs to fight for a stronger and louder voice at the decision-making table and for deep-seated reform of the current planning process - and this ought to be evident in this strategy.
- While the proposed measures are well and good, they do not address the root problem of an incestuous relationship between developers and politicians, which invariably renders planning decisions political. While recognising that this issue goes beyond the remit of ERA, the strategy must recognise these wider issues if it is to have long-term success in this area.

- Some contributors to persistently vacant buildings may be complex and beyond ERA's remit, e.g. inheritance disputes that drag on in court for years. Other stakeholders than those mentioned will therefore be relevant to finding proactive solutions.

### Strategic Objective 5.3

- This objective reads like a desired wish list but also, regrettably, like a bit of a joke when considering the state of development in the country. For the most part, the planning system does not appear to take into account even basic considerations of environmental sustainability and wellbeing - let alone wider environmental flows, functions and considerations.
- Spatial Planning and the development permission process need to better consider the protection of areas in Malta which can be considered priority recharge zones, and should ensure strict adherence to planning policy related to activities authorised within the Groundwater Safeguard Zones. This Strategic Goal also directly addresses SDG6, specifically SDG Target 6.6, to protect and restore water-related ecosystems, including wetlands and aquifers, and the link between spatial planning and the protection of freshwater water resources needs to be better defined. It is known that a number of outcrops of Lower Coralline Limestone (LCL) in the central region of Malta have a disproportionate contribution, in view of their relatively small surface area, to the recharge of Malta's Mean Sea-Level Aquifer. The activities permitted in these recharge zones must therefore safeguard the quality and quantity of recharge water and must protect the potential for these zones to be utilised for Managed Aquifer Recharge in the future. Dry valley systems with outcrops of LCL having underlying water galleries leading to operational pumping stations that supply the municipal water supply network include Wied tal-Isperanza, Wied Inċita, Wied Bakkja, Wied Ħesri, Wied Qirda and Wied Ħanżir. Also important is the protection of outcrops of LCL containing quarries for which permits have been issued allowing deposition of construction and demolition material by third parties.

### Strategic Objective 5.4

- The measures described here are rather vague. A first goal should be for Malta to ratify the European Landscape Convention - with a clear commitment of a deadline by when this will be done. It is a bit ironic to be discussing landscape quality as a Strategic Objective when Malta remains the only signatory state not to have ratified this Convention, 22 years after it was signed. There also needs to be a dedicated effort within ERA and the Planning Authority to address landscape issues by, for instance, following up on the long-outdated 2004 Draft Landscape Assessment of the Maltese Islands, and through the definition and implementation of Landscape Quality Objectives for localities, with the participation of local communities.

## **Strategic Goal 6: Ecologically diverse, healthy and productive marine waters, capable of supporting sustainable growth**

This is a noble goal which is, however, fraught with numerous challenges and a host of implications for management of resources, including issues of transboundary monitoring and controls where fisheries (and associated competition) are concerned. There is also the issue of methodological approach. Terrestrial coastal areas and the marine environment can no longer be seen or managed in isolation for very many reasons, not least economic, social and environmental. The idea of managing coastal resources via 'integrated coastal management' has become rather outdated. Management authorities of coastal nations, particularly where conflicts-of-use abound, now resort to methodologies ensuring **integrated coastal and river basin management**, in view of the connectedness of fluvial systems and the sea, inclusive of the intertidal zone.

### **Strategic Objective 6.1**

- Ocean acidification (OA) is the process of ocean waters becoming more acidic as a result of carbon dioxide being absorbed by seawater and reacting with water molecules to form carbonic acid. OA is happening at a rapid pace primarily due to human activities, and its effect on marine life and fisheries will consequently impact industries such as tourism and fishing. It is unfortunate, therefore, that the NSE document only contains a single reference to 'sea acidification' within this Strategic Objective. Despite the increasing scientific certainty on the scale and consequences of OA, and on the need for immediate action, this issue has been almost entirely overlooked when it comes to the local environmental agenda. The problems associated with OA and the solutions needed to address it are unique and cannot be bundled together with traditional climate change responses and measures. A national OA-related policy and legislation must be drawn up to so that the appropriate actions to mitigate OA and safeguard marine ecosystems and livelihoods can be identified and carried out.

### **Strategic Objective 6.3**

- This Strategic Objective states that "improved understanding of the exchanges of energy and nutrients through marine food webs will be ensured since these exchanges reflect the functioning of marine ecosystems and hence underpin restoration or rehabilitation actions." This is commendable, and every effort needs to be made, in terms of capacity building, training and investment) in this regard. No ecological modelling that investigates how various parameters, such as species abundance, aggregations and predator-prey interactions, affect the structure of a system is currently taking place in Malta. Marine ecosystem models use these calculations to predict changes in population characteristics over time due to environmental factors such as temperature, or human activities such as fishing.



## Strategic Goal 7: Sustainable water resources that ensure long-term use and support water-dependent ecosystems

This is a hugely important strategic goal with implications that transcend the somewhat narrow focus of sustainable use in support of aquatic ecosystems, largely because of the colossal negative impact that the building industry has had on groundwater and surface runoff over the last four decades. Aggravated by changes in weather patterns which have led to more erratic precipitation episodes, and coupled with an unprecedented level of hard landscaping through construction and road building, aquifer recharge through natural percolation has been greatly reduced. Every effort therefore needs to be made to ensure mitigation of the impacts on surface runoff, subsurface waters and groundwater dynamics. Moreover, it is critical to afford a high level of protection to valley systems and other natural water conduits, both in terms of flow (i.e. monitoring the impact of dams) and water quality (i.e. monitoring for the illegal dumping of waste, especially farm biosolid waste).

Secondly, but equally important, is the fact that valley systems act as a principal vehicle for conveying terrestrial sediment towards the sea, which subsequently nourishes the few existing but economically and ecologically important sandy beaches on the Maltese coastline.

### Strategic Objective 7.1

- With reference to weaning the domestic, commercial and industrial sectors off groundwater supplies, it is important to note that groundwater resources, specifically those of the Mean Sea-Level Aquifers, remain essential agricultural and potable water sources that must be protected. Attributing an economic value to groundwater whilst making alternative sources available to private water suppliers will control over-abstraction while also ensuring that the essential service these economic operators provide to users who do not have access to water on-site is maintained.
- The impending drier climate will create a greater dependence on reclaimed wastewater as an alternative water supply. This dependence will require a sustained effort towards enforcing the Sewer Discharge Control Regulations in order to protect the quality of discharges to the sewer, particularly from industrial sources.
- Providing farmers with groundwater and soil nutrient quality data, together with the tools to understand the deficit in nutrients which would then need to be applied artificially, should be considered. Utilising the available nutrient resources in both water and soil would reduce the application of fertilisers while also reducing farmers' production costs.

### Strategic Objective 7.4

- In our changing climate, the demand for reclaimed water will only increase, and it is necessary to rethink how this scarce resource is allocated to the agricultural sector. Models for allocating reclaimed water therefore need to consider the farmer's economic output as well as the efficiency with which the water is being utilised. Current allocation models based on the size of agricultural land parcels result in inefficient water use by certain water users, often leaving full-time farmers without access to the limited resource.
- The current use of subsidies masks the real cost of the service. Assigning economic value to all sources of water, including the collection and treatment of wastewater, would encourage innovation and increase efficiency in water use.

## **Strategic Goal 8: Enabling and empowering the required green transition**

### **Strategic Objective 8.1**

- Cross-sectoral policy integration is much needed in view of the current lack of cohesion and shared direction across the various public sector entities. For example, the tourism sector recently announced that they wish to raise annual tourist numbers to 4.2m; in order to achieve these numbers, however, Malta would need to have sustainable and reliable infrastructure in place for transport, the production and distribution of water and energy, and waste management. Another example is the promotion of alternative means of transport such as walking and cycling, while concurrently widening the roads to allow for more cars without providing for cycle lanes and pedestrian pathways.

While there are many valid policies already in place, some of these are redundant and others are just not enforced. A good starting point would therefore be to review existing policies, and to find ways to enforce the valid ones already in place. Without strong enforcement, any new measures will just perpetuate the lack of success of the many current policies that exist only on paper.

### **Strategic Objective 8.2**

- In order to achieve a green transition, the country needs a change in mindset, starting with the construction industry. This is currently one of the biggest waste generators, also contributing significantly to noise and air pollution and to traffic congestion issues, leading to a marked decrease in residents' quality of life. The ability of the authorities to objectively and independently evaluate the "socio-economic costs, trade-offs and wins" with respect to this sector, and to take the necessary action, remains doubtful.

### **Strategic Objective 8.4**

- There has been an increase in the awareness of ESG locally and a number of companies, especially audit-related firms such as Deloitte and PwC, are actively promoting this approach. However, there is ample room for increasing good practices throughout all sectors with respect to improved environmental performance. Support and encouragement by Government for the adoption of more sustainable measures is therefore commendable, and government entities are urged to lead by example, by ensuring that ESG is central to their practices and by facilitating 'best practice' sharing across the public sector.

### **Strategic Objective 8.6**

- As noted earlier, while the mainstreaming of environmental knowledge and skills is a positive initiative, it must also be recognised that raising an environmentally-sensitive generation requires that we give due consideration to the living environment that we are creating. It is delusional to expect people to be environmentally sensitive while we continue to crowd out any remaining natural and semi-natural spaces and where, notwithstanding the educational efforts implemented, regular exposure to nature is becoming more and more challenging.