PORTUGAL

FIRE ADAPTED COMMUNITIES

SCOPING AND ASSESSMENT REPORT

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1 Introduction

The concept of Fire Adapted Communities, by definition, requires that there is close involvement of civil society during the development and roll out of any integrated fire management plan that will lead to a reduction in vulnerability and an increase in resilience at a community level. Each community is different and individual, and therefore solutions should be crafted at a local level by local people, respecting local values and customs. The role of agencies and authorities, able to transfer very necessary technical knowledge and expertise, is to guide and work with communities so that civil society is empowered by knowledge and thus develops an increased commitment to the solution.

Ideally, all stakeholders should agree upon what needs to take place, in order for a Fire Adapted Community to take shape. Realistically, however, this is a process that takes time and effort, when good communication, facilitation, negotiation and listening skills are just as important as technical knowledge. Dialogue and an exchange of views develop trust, as well as the ability to work together for a common goal.

The perception that citizens are simply 'victims', unable to protect themselves, is simply not true and there is ample evidence to refute this, proving that civil society is part of the solution to the fire problem. However, without a bottom-up, community-driven approach, citizens do not generally take ownership of the ignition potential of their own homes and properties, and continue to expect fire protection by authorities when this is simply unrealistic. We can expect that worsening climatic conditions, conducive to extended periods of fire weather, will add to this problem.

2 The Firewise Community methodology

Firewise Community initiatives provide the opportunity for an active civil society platform and voice within the greater plan of Fire Adapted Communities. LANDWORKS™, in partnership with the USA National Fire Protection Association, has used Firewise Communities methodologies to suit varying conditions and countries for 12 years. Over this time, we have adapted the methodology to include the wider landscape vision that encompasses the concept of Fire Adapted Communities, as the treatment of landscapes is just as important as the fireproofing of structures when developing community resilience. At its heart, a Firewise Community initiative aims to gain acknowledgement by community members of their own personal ignition potential and of those around them. Thereafter Firewise Community concepts encourage and support collective community action and a shared vision to reduce risk.

A primary focus of a Firewise Community initiative is that of creating awareness of the dangers of uncontrolled fires by equipping homeowners, community leaders, planners, business owners and developers with knowledge about risk reduction so that they can find local solutions to landscape fire safety. The protection of families, property, assets and the environment, before a fire starts, is a priority, as is the preparation of an action plan for an emergency.

Volunteer Firewise Community groups serve as a locally-based forum for a shared vision among stakeholders for overarching fire prevention and land management strategies, as well as a source of information for rural communities, the media, government institutions, educators and fire brigade services. In creating community awareness about fire weather, the extent of wildfires and the availability of firefighting resources, Firewise Community groups can, and do, become information conduits for communities. They emphasise and communicate individual responsibility for safer home construction, garden design, landscaping and maintenance as well as landscape risks. With appropriate training and equipment, they can be capacitated to undertake safe fuel reduction and act as first responders, supporting, not interfering with, the work of mandated government agencies.

The Firewise Community aims to:

- Improve safety in the wildland/urban interface by learning to share responsibility;
- Create and nurture local partnerships for improved decision making in communities, and;
- Integrate Firewise concepts into community and disaster management planning and operation.

The first step is to carry out an initial scoping that identifies the community as one that is at risk. This can be undertaken by a technician, but the individual should ideally have community facilitation experience and be able to relate sympathetically to community needs and values.

- Identify the objectives of fire awareness interventions within a community;
- Investigate the fire history of an area and its impact on surrounding communities;
- Conduct a risk assessment and determine the risks and hazards the community is exposed to;
- Identify groupings that include, but are not limited to, existing religious, civic and education platforms, local government and traditional authorities;
- Define and understand potential community involvement in Firewise activities, and;
- Identify possible mitigating measures for risks and hazards.

Inception meeting

Once the need for a Firewise Community has been identified, the next step is to advertise and organise a formal meeting with as many interested community members and stakeholders as possible. The purpose of the community meeting should be clearly communicated to all, along with additional motivation to encourage participation, if required. The objectives of the meeting are to;

- Explain and discuss the hazards and risks that the community is exposed to;
- Introduce the context and concepts of Firewise Communities;
- Put forward proposals and discussion points for the mitigation of fire risks, and;
- Suggest the appointment of a volunteer Firewise Committee made up of local people living in the community and offer the train-the-trainer course to willing volunteers.

It is important to advise the local authorities of the intention to hold a Firewise Community inception meeting. This could be seen as a courtesy notification as the meeting is taking place within their areas of jurisdiction. However, it could also be seen as a call for assistance and support. It is not mandatory for local authorities to attend an inception meeting, but it is desirable.

Firewise Community Train-the-Trainer Workshop

During a 2-day capacity building workshop 20-30 trainees, drawn from a number of communities in the area, are taken through a range of modules covering four main capacity building areas:

- Understanding the Fire Environment
- Risk and Hazard Assessment and steps to mitigate risk
- Exploring and negotiating community-based solutions. Conflict and compromise within communities and stakeholders
- Planning and executing a community fire management plan

Trainees work in groups and go through practical exercises related to each training area, including role-playing in communication and negotiation exercises. Following discussion sessions, each group presents its strategy and plan to all trainees.

At closing, workshop attendees should be able to recognise what makes communities vulnerable to unwanted forest and bushfire hazards. They should be able to assess what need there may be for practical interventions, be able to discuss with a community

what values the community feels are important, how to communicate with and encourage communication, address potential conflicts within the community and how to propose acceptable solutions. It should be borne in mind that communities do not function in isolation. They border on, and simultaneously impact on, neighbouring communities with a variety of different economic activities. Thus, during planning, landscape-wide activities and neighbouring communities should be identified, as alliances can be formed that can contribute to the establishment of effective, sustainable Firewise Communities.

After some practice following the workshop, trainers should be able to run an inception meeting, establish a Firewise Committee, undertake a community training session, identify relevant authorities and important stakeholders at both Local and District Municipality level, be sufficiently confident to include them in meeting invitations, notify them of initial Firewise objectives in the area and create dialogue between community and stakeholders.

Activating Firewise Communities

Following the inception meeting and training, the hope is that trainer groups (one aims for at least 3, preferably 5 trainers emerging, in a community of not more than 200 homes), provided with presentation and communication materials, will start the planning and communication process in their own village and recruit more volunteers to share the workload. During their first community engagement period, their communication and negotiation abilities will be put to the test. Generally, we keep in contact with, encourage and mentor groups through their first community meetings, fairly closely over the first six months and thereafter as needed. Mentoring, encouragement and advice are critical success factors during the early stages. Initially, we encourage trainers to work together as a group, supporting each other and sharing experiences until they feel sufficiently confident individually to continue the work as a trainer, or team of two, in adjoining villages or the broader landscapes.

- The Firewise Committee's first goal is to prepare a draft community fire management plan, and engage the community and authorities in discussion about this, drawing in further community volunteers. The initial planning phase highlights gaps in knowledge, further training that may be desired (such as basic firefighting, fuel treatment procedures, first aid training, etc.) and stakeholders that would be able to contribute to its success. A critical success factor is that the community fire management plan should be achievable by the community and within their ability to undertake so that they are encouraged by their own progress.
- Their second goal is to have the plan adopted by the community and involve stakeholders such as fire authorities and large landowners, critical to the plan's success.

- A tool used to encourage community participation is the Firewise Recognition Programme. To obtain boards for erection in the village showing that they are a Firewise Community, after one year the Firewise Committee must show that it has a plan in place, (template provided) prevention activities outlined in the plan have been undertaken to reduce risk and they have held at least one general fire awareness event. This is reviewed annually, as is the fire management plan. The erected boards serve as an advertisement as well as a reminder of achievements.
- If the above is achieved, with acknowledgement and support from municipalities, local fire and land management agencies, the group is well on its way to being sustainable.

3 Our brief

1. Assess vulnerability to wildfire in the Monchique municipality and a selection of Aldeias do Xisto in the mountains close to Lousã. Assess the vulnerability of tourists visiting these areas.
2. Engage authorities and civil society in awareness–raising activities that support existing Portuguese mitigation programmes and the underpinning concept of Fire Adapted Communities.
3. Carry out community–based risk and hazard mitigation training in two venues.

As a self-assessment, we believe that we were able to carry out our first and second objectives fairly well, given the time at our disposal. We were unhappy with the completion of the third task, however, as there was insufficient time to complete the course in both training sessions. The trainees were exposed to those parts of the course that we felt were critical to pass on to community members, so that they gained an understanding of risk, however the equally important aspects of communication, community education and engagement that would have been especially beneficial to government employees that were present and in the majority, were not covered at all as the time allotted was the equivalent of one day for a two day course.

The time allotted also affected the potential for the rich discussion and debate that normally takes place during the role play exercises when trainees are taken out of their comfort zones and purposefully placed in a role that they are unaccustomed to dealing with in their daily lives. Planning and the steps required to prepare a Community Fire Management Plan were not covered at all, as the practical exercises that engage with this process, were not used. This was far from ideal. In an attempt to retrofit, as we believe that there were community members present that are willing to engage with their villages, we have put in place steps to provide additional material to email groups online. Ideally, we would like to come back to complete what was initiated. Overall, we required more time for training and prior engagement with potential communities to

identify community volunteers for training. In effect, the sessions were somewhere in between an inception meeting and a training workshop.

That said, we believe that we sparked interest in those that were exposed to ideas and concepts during seminars and training sessions, and that the community–based risk management approach would add value and depth to the existing Aldeia Segura, Pessoas Seguras programme that Portugal has started.

We estimate that we directly addressed between 55 and 65 individuals about community–based initiatives during our time in Portugal. A newspaper interview and a radio interview may have raised interest in the public domain.

4 An overview of common issues

The duration of our stay in Portugal was short and our brief focused primarily on Monchique and Aldeias do Xisto close to Lousã. Notwithstanding this, there were common threads that affected both areas and may be present elsewhere in Portugal.

4.1 Of greatest concern is the high level of fire fuels in the landscape. This appears to be closely linked to land tenure, landowner rights and land abandonment. While commercial plantation owners may manage plantations for understory fuels and have fire management plans, most of the countryside viewed during the surveys of Monchique and Aldieas do Xisto appears to have suffered neglect. Eucalyptus, Pinus and Acacia sp dominate the landscape, creating dangerous conditions for communities and the potential for large-scale fires that will be expensive to suppress. We could liken this to bush encroachment – in this case, over time the landscape has simply been invaded by non-native forest species.

Conversely, places where indigenous vegetation remains, or the landscape has been treated and indigenous shrubs have come back, the fire fuel loads, while still flammable, are very significantly reduced, and thus hazards correspondingly reduced. In outlier villages in the south, where agricultural practices are being pursued, even when there are Eucalyptus plantations, the landscape is broken up into a mosaic of varying fuel types and densities, thus reducing hazards to the villages in these landscapes. The pictures below illustrate this difference.


4.2 It was evident that both *Cãmeras* are doing what they can to reduce fuels alongside roads and by serving notices to clean on overgrown plots within an urban area. However, we observed, in both regions, that Acacia was being cleared without any herbicide application and was coppicing vigorously after clearing. While this may reduce some hazardous fuels this season, it was not an efficient or sustainable solution. In fact, this methodology will simply increase the encroachment, and thus fire fuels, over time.


4.3 There was some confusion regarding the legal requirement to clean or clear a 100m firebreak around villages. Given the high fuels remaining on both sides of such firebreaks, their effectiveness would be questionable during wind-driven fires carrying firebrands. These are proven globally as the main reason for the loss of structures during a wildfire, as well as dangerous spot fires that bring the wildfire into the community, with potentially devastating effects. In some places, a 100m break is not practical, sustainable, environmentally-friendly or tourism friendly. At the same time, concerned residents felt helpless to do anything about high fuels on neighbouring properties because of land ownership issues.

Land tenure – and the uncertainty about who owned what – was raised frequently in discussion. The availability and confidentiality of such information was also a topic discussed at length. Ideally, to reduce risk at a village level, some fine-scale mapping is required as part of the community's preparation. Identifying high hazard properties and convincing their owners to reduce, thin or manage potential fire fuels on their land goes hand in hand with preparation. Absentee landowners and land abandonment are problems that we have come across frequently during our work elsewhere.

In our experience, the likelihood of addressing this challenge as a community collective by making the landowner accountable to the community, rather than the authorities, does work. Success would be enhanced if there was an implementable statute regarding the treatment of abandoned land, but I have yet to come across one anywhere that works very effectively. South Africa's National Veld and Forest Fire Act of 1998, with its provision for Fire Protection Associations, has helped to make a significant inroad into this problem by creating collective pressure on landowners at the local level and the community–based Firewise model also helps at the village level.

In the case of both Monchique and the Schist Villages, there was a reluctance to engage with adjoining landowners, because the timber on the land was seen as being an "asset" belonging to the landowner: in fact, it should be portrayed as a liability.

4.4 Overall, homes are built from non-flammable brick or stone. Weak points are the tile roofs (often not well maintained), wooden structures such as outbuildings, pergolas, doors, verandas and railings attached to the building that act as ladder fuels; flammable materials such as overhanging branches and woodpiles adjacent to the building; generally a lack of an adequate defendable space around structures. All of these can be remedied with education and a little effort by the owner. Abandoned buildings, and we saw many, are not so easily remedied. These do pose a risk to neighbours living nearby, as they will be the buildings most likely to catch alight from ember attack.




4.5 The tourism sector and foreign residents**.** Portugal is, quite rightly, a preferred tourism destination and this creates an annual influx of foreigners, some of whom decide to stay indefinitely and who may, or may not, be aware of the risks associated with living in a fire-prone environment. In this respect, there is a joint awareness responsibility.

The tourist or foreign national should be aware of any risks that they may be exposed to, and should be able to access information prior to visiting. As suggested in the workshops, compiling information and making this available to embassies, travel agents and online is not difficult. The same rule would apply to a foreign national that decided to reside in Portugal. Safe Communities Portugal is doing great work to make this happen and we hope that foreign residents that were exposed to the training make community integration, as well as fire mitigation, a part of their fire risk reduction plan.

An increasingly difficult situation is the real-time prediction, scale and severity of a wildfire with its associated weather conditions and the increasing likelihood of unstoppable fires flowing into tourist destinations with devastating effects. Moreover, how should this potential risk be addressed without scaring off tourists? The primary liability and responsibility for keeping tourists safe does,

however, rest with the Government of Portugal and will require a multi-legged strategy and plan beyond the scope of this brief.

Including the assessment of visitor safety into this brief has highlighted certain activities that could be undertaken and will, perhaps, give some pointers for going forward. If not already in existence, the development of a safety charter by the tourist accommodation sector might be suggested. The issue of evacuation or 'shelter in place' is a problem in respect of tourists, unless their accommodation has planned for either eventuality and has practised for it happening.

The annual swell of visitors during the summer may already place a strain on local authorities' resources and a wildfire on the doorstep may simply overwhelm authorities. Preparation is often the weakest point in the fire management plan, closely followed by Communications, or the timely lack thereof.

An easy win is to broadcast daily weather, fire warnings and alerts on radio, television and social media. One can go further by an over-ride SMS alert through cell phone networks. Educating about fire weather always pays good dividends. Information leaflets for airports, customs points, hotel receptions etc., are also easy to prepare. We would be happy to be involved in a future brainstorming session specific to visitor safety.

5 Creating the enabling environment

5.1 There are multiple government departments, at all tiers of government, involved in the land management and fire management sector, and this is the global norm. Our perception, in both Monchique and Aldeias do Xisto seminars and training sessions, was that some officials were in the same room together for the first time. We may be wrong. Regardless, our experiences elsewhere lean towards stressing the importance of bringing groups of officials from different departments together, as they generally have different mandates, to discuss and hopefully co-ordinate their fire hazard mitigation, land management and fire suppression efforts. We purposefully call these sessions 'Round Tables' and we often start the session by leading with one subject: "Who owns the Wildland Urban Interface?" and from there we lead into the subject of integrated fire management. Engaging officials at a district level is ideal as this is often the level of first response.

5.2 We have also found elsewhere that there are numerous pieces of legislation, under which Departments are operating, that frequently conflict with each other. The Round Table sessions help to clarify and communicate what these might be, how to work synergistically and practically within the law, as well as gaps in local capacity, communication, etc., that impact upon compliance. The phenomenon of 'unfunded mandate' is common, whereby national legislation is passed without due consideration of the capacity or ability to enforce by local officials.

We have appended Form 1 to this document, created during the GEF FynbosFire project. It may be a useful tool to assist with multi-stakeholder and multi-jurisdictional discussions.

6 Monchique

6.1 Overview

With assistance from the municipality, we were able to survey the area immediately surrounding Monchique town and most of the outlier villages. Private properties ranged from terraced homes centred in a close village layout, to larger properties, with larger homes well-spaced from each other, as typified in the picture above. In almost all cases, both layouts are surrounded by dense, very flammable vegetation. Eucalyptus plantations, Cork Oak plantations (some well-managed, others not) and other small agricultural activities are interspersed across the landscape. Roads are narrow, often winding and overgrown. Invasive Acacia and Eucalyptus growing on road verges, combined with the narrow roads, is not a good combination, adding a further fire hazard in a landscape that overall, is very high. The topography of the region, together with the existing hazard level, lifts the risk rating for some suburbs of Monchique to extremely high, with the small village complexes rated as high.

- Landscape fire fuels are very high.
- There is no defendable space around individual structures.
- Entry and exit routes are limited – often a single narrow road.

- Under weather conditions conducive to wildfires, fires could be easily transmitted across the landscape directly (continuous fuels, ladder fuels) and indirectly by flying firebrands, resulting in spot fires and structure ignitions.
- The narrow roads and limited egress routes, exacerbated by fire fuels on road verges, will make evacuation challenging.
- In a conflagration, citizens that shelter in place may be exposed to air quality and temperatures that will be almost impossible to endure.


6.1.1 Recommended actions

- Local authorities are very committed and aware of the hazards. Consider amending regulations and plot clearing tenders to include the use of herbicide on appropriate species.
- Safe houses in small village complexes should be brought to standard in terms of their safety and defendability, including an independent source of water.
- Run simulation evacuations to test procedures.
- Expand and clarify communications relating to land cleaning and management, defendable zones on properties and the home ignition zone.
- Clean up road verges and remove slash.
- Provide support to nascent Firewise Community groups driven by civil society.
- Provide opportunities for facilitated 'Round Table' discussion groups of local leadership and agency representatives.

6.2 Tourist accommodation

As requested, we scoped as many properties as possible.

Tamera




- Risk assessment level is moderate.
- The owner is very aware of the fire risk and has taken steps to mitigate risk.
- The resort has a volunteer firefighting team and a fire management plan.
- There is adequate water on site.
- Sand-filled fire buckets are prominently displayed.
- Fire fuel risks are moderate to low within the resort. The grass-roofed meeting place will not withstand an ember attack, but the land within the resort is largely landscaped and managed.
- Topographically situated in a valley, with multiple entry and exit routes. Surrounding landscape fire fuels are much higher (plantation and agriculture)
- The owner attended part of the training and we are in contact with him.

Macdonald Monchique Resort and Spa






The building is well built. However, there are shortcomings:

- Risk assessment level is moderate.
- Single road access.
- Mountain/gulley topography.
- Parapet roofs must be maintained and kept clean of vegetation.
- The layout of accommodation blocks would require a sophisticated, well-rehearsed evacuation system.
- Meeting point for evacuation is in a courtyard in the middle of the hotel complex, furthest from the exit and close to a high voltage power line.
- Plastic furniture outside rooms and on balconies, and cloth umbrellas, would be open to ember attack, and thus set building alight. Metal furniture would be better, or all garden furniture needs to be taken inside during a wildfire.
- Access for firefighting vehicles, especially a ladder tender, would be difficult, given the width and angle of road culvert. The height of the building may require ladder access.
- Landscaping efforts are good. Replace grasses with fire-resistant succulents such as Aloes.
- Remove / thin out woody fire fuels in proximity of boundary walls.

Monchique Spa Resort, Caldas de Monchique






Accommodation options are all clustered within a small valley and therefore were assessed collectively.

- Risk assessment level is high to extreme.
- Narrow single road access, which splits into a circular one-way road taking one around the spa village.
- Situated at the top of a ravine filled with heavy fire fuels.
- Surrounded by high fire fuels. Very little defendable space above the road and no defendable space around structures. Difficult terrain.
- Structures would be prone to ember attack. Clean up and roof maintenance required.
- Evacuation would be difficult. Any fire in the ravine below would cut off the exit. Leave early.
- Special attention may be required to protect buildings of historic value

Vinha do Gaio, Cascais

- Risk assessment is level moderate to low. It may increase in the future due to the proximity of plantations.
- Fuels in immediate proximity are not high. Light grassy fuels near buildings should be managed pre-fire season.
- Grass roof with skylights is a high risk under ember attack.
- Moderate clean-up will provide defendable space around the building.
- Semi-agricultural surroundings.
- Consider a secondary exit track on to the main road.

6.3 Outlier villages

On the whole, we assessed small outlier villages positioned in productive agricultural landscapes as having a moderate risk. The mosaic of crops, natural vegetation, mixed land use, orchards and plantations serve to break up fire fuel types and provide anchor points to fight a fire, should one occur.

Judicious placement of strategic firebreaks around Eucalyptus and Cork Oak plantations, combined with understory fuel management and road verge maintenance would also assist with reducing risk to villages. We observed the work of Aldeia Segura in Moitinhas where a building has been designated as a meeting place and efforts have been made to clean the surrounds of fire fuels.

- Displaying the daily Fire Danger Index may reduce the risk of unwanted ignitions caused by harvesting or stubble burning.
- Designated safe houses should have a well-maintained roof, windows, doors, a minimum of 30m defendable space around the building and a source of water. Cars should be parked well away from the safe house.
- Maintain wide road verges; treat invasive Acacia and escaped Eucalyptus that are encroaching landscape.
- Clean up and thin out vegetation close to structures and in wildland/urban interface zones.
- Rehearse the evacuation plan.






7 Aldeias do Xisto

7.1 The group of Schist Villages in the mountains close to Lousã was surveyed as a collective, as they are all very similar in aspect and position. As a piece of Portugal's history, they are very special and worthy of classification as World Heritage sites, so we hope that this comes to pass in the future.

They are a popular tourist attraction. Each place we visited had a constant stream of visitors - some touring and others staying overnight. Residents, who are mostly foreign nationals, have worked extensively to restore buildings and manage the immediate surrounding landscape, however, many buildings remain derelict and the villages are nestled amongst incredibly high fire fuels over which they have no jurisdiction. The old system of terraces is mostly swamped by vegetation encroachment and the road system consists of very narrow roads canopied by trees – mostly invasive Acacia and Eucalyptus.

We admire the few individuals that have taken on the mammoth task of restoration. Given the age of these villages, they must have withstood fires in the

past, so we would have liked to have more fire history to place in context. Topographically, were they built in fire shadow areas, for example?

We were told that in the not too distant past, the villages were occupied by pastoralist and agricultural communities, keeping livestock and using the surrounding terraces and mountains for grazing and crops. This changed substantially during the 1940's and with the coming of the railway to Lousã, which made urbanization attractive.

There is a perception that the wooded mountains and valleys (including Acacia in flower) are a part of the tourist attraction. We would dispute the perception that the forests enhance the visitor experience. One can barely see the view when driving as it is mostly obscured by trees, and a visible, diverse landscape of Cork Oaks, Chestnut orchards, indigenous vegetation and well-managed terraces would be as pleasing, if not more pleasing, and much more interesting than the current solidly green, almost impenetrable forest canopy that has come about by neglect rather than by design. Note the picture below of Cerdeira Village taken in 1963 compared to the current landscape.

- Risk assessment for all villages visited is extreme.
- Terraced homes will be difficult to protect from firebrands. Structures are all close together, pathways are narrow.

- Many derelict structures in between restored cottages.
- Roof structure, wooden windows, decks, pergolas and doors all at risk from firebrand ignition.
- Visitor safety is a very big concern.
- Inadequate evacuation options.
- Villages surrounded by very high fire fuel loads.
- Inadequate defensible space around village complexes, although good effort has been taken to thin out, clean understories and establish grassy areas.
- Road access is very constraining. Roads are narrow and overgrown. Both the risk of spot fires and smoky conditions would make driving very hazardous. This will affect evacuation options but also access for firefighting resources during an incident.
- Entry/exit options are limited,


Um paraíso feito de xisto!

7.2 Solutions for the Schist Villages will need to be broken up into short, medium and long-term goals

7.2.1 Long-term sustainability:

- Any long-term, sustainable solution will be expensive and will require a bold project plan with multiple source funding. Our view is that the only viable solution to create the Fire Adapted Communities envisaged will be the gradual reintroduction of pastoralism and agriculture back into the landscape, thus managing fuels; coupled with an aggressive programme to remove the Acacia (and Eucalyptus that has escaped plantations) that is gradually transforming these mountain landscapes into flammable green wastelands. While this idea is bold and may take 10 years, it will have benefits well beyond landscape fire management and fire risk reduction. It will create business and income generation opportunities for local people. It will enhance tourism potential. There is already a strategy put in place by the Aldeias do Xisto network and thus the Fire Adapted Communities concept could be added as a layer to the existing network's sustainability strategy.
- Eco-tourism is on the increase, as is support for artisanal produce such as goat cheese and meat and local produce that can prove its provenance. It would be interesting to know if there is a young farmer's programme in Portugal that would see value in a co-operative venture.

7.2.2 In the short term:

- Visitor safety is a very real liability. As well as the road network, there is a hiking trail network and the mountains are open access. Parking areas are inadequate and uncontrolled. Rapid evacuation would be a nightmare. We saw no viable 'shelter in place' options and evacuation areas are inadequate. Information boards, coupled with fire danger index boards, should be made compulsory at the entrance to every village.
- For anyone on site during a nearby fire, survivability will likely be compromised by heat as well as smoke. During a catastrophic fire, survivability will be low.
- The above points towards early communication of an ignition that might become a risk to any of the Schist Villages; early road closure to stop tourists entering the mountain road network that accesses the villages and early evacuation of villages, with vehicles being escorted out by authorities.
- Maintain any fuel treatments already completed, on mountain tops and surrounds.

7.2.3 In the medium term:

- Village management committees should prepare a community fire management plan with one-year, two-year and three-year goals.
- It should include improvements to evacuation areas, identification of a building suitable as a community shelter, and a fuel management plan to create a wide defensible zone around the shelter building.
- It should include building specifications that would provide guidelines for further restoration work. While the stone walls may stand for another 100 years, the roof structure is a weak point, as are ladder fuels. Pre-season, derelict buildings should be cleaned of vegetation and old wood that can become ignition sources for firebrands.
- It should include a fuel management plan for the landscape in the immediate village ignition zone – minimum 30m radius from the outer cottages. More would be better.
- Regardless of land ownership, it should prepare a fuel management plan for a buffer zone around each village. Topography will dictate the size; however, a 500m radius would be good. Together with authorities, engage surrounding landowners to bring buffer zone of reduced fire fuels into existence.
- It should include a communications plan and a response plan when there is an ignition within the buffer zone. If the local fire service is more than 15 minutes away, consider water source access, the need for floating water pumps and independent firefighting resources for initial response.

8 Training

Two train-the-trainer sessions were undertaken, reaching a total of 40 attendees. Attendance lists are appended as Annexures A and B. Training materials were supplied during the course, however, there is always a need for follow-up and mentorship. We undertook to set up email groups so that trainees can keep in contact with each other. We will, as well, provide further guidelines about initiating Firewise Communities in their area and supply presentations that they can use in training sessions. Trainees will also receive a Certificate of Attendance. This is underway. The course evaluation, normally completed at the end of the course, has been set up as an anonymous email survey as, again, there was insufficient time for this to be done on site. The results will be supplied. Although a decision was taken for the training to be carried out in English, any future courses would benefit from simultaneous Portuguese translation.

In both sessions, there was a good mix of authorities responsible for land management, civil protection and civil society members that lived in landscapes that are at risk, however, attendance leaned towards those employed by government agencies, which was not ideal. As there was insufficient time to undertake the full training session, we focused primarily on the fire environment, the process of risk assessment of structures, fire hazards in the immediate surrounds and response during a fire incident, including evacuation. We used a generic, but comprehensive, risk assessment form that was relevant to the situation, but stressed that this could be adapted to suit specific areas, if the trainees wished to adopt the process as a norm. A walkabout provided the opportunity for practical use of the form as we unpacked and discussed each element, rated the risk and talked about what could be done to mitigate the risk. At the end of the session, we talked a little about the planning process, which would be the next step for trainees that felt motivated to initiate a community–based group in their village.






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9 The concept of Fire Adapted Communities

Our work was undertaken within the ideal of what a Portuguese Fire Adapted Community (FAC) might look like in the high-risk landscapes that we visited. Although the phrase and definition originated in the USA, we have tested its parameters in various countries and not found it lacking as a point of departure towards a very desirable goal. Thus, as far as possible, our scoping of communities in Monchique and Aldeias do Xisto sought to lock into these ideals, but also expand upon them, specific to our brief. The definition is a good starting point, but also a good ending, as it is the government and citizens of Portugal that must ultimately decide if this is their definition of a Fire Adapted Community and whether there is the commitment to 'strive to achieve' FAC characteristics that will lead to safer communities within well managed natural systems and landscapes.

A fire-adapted community (FAC) is a community of informed and prepared citizens and officials collaboratively taking actions to safely coexist with the wildland fire threat. A FAC has, or is striving to achieve, the following characteristics:

It exists within or adjacent to a fire-adapted ecosystem.

Adequate local fire suppression capacity is available to meet most community protection needs.

Structures and landscaping are designed, constructed, retrofitted, and maintained in an ignition resistant manner.

Local codes (building, planning, zoning, and fire prevention codes) that require ignition-resistant home design and building materials are adopted and enforced.

Fuel treatments are properly spaced and sequenced and are maintained across the landscape.

A community-based fire protection plan is developed and implemented.

The community has a defined geographic boundary

10 Recommendations

Each section above contains recommended actions specific to the subject.

Our overall recommendations are the following:

10.1 The Aldeia Segura, Pessoas Segura programme is providing a good overarching guideline for citizens and the initiative is commendable. Our opinion is that it does not sufficiently engage civil society in a call to action at a local level. We believe that the addition of the Firewise Community engagement model and concepts would provide depth to the Aldeia Segura, Pessoas Seguras programme, enriching it and supporting its adoption by citizens, especially in areas that are at very high risk.

10.2 While recognising that steps have been taken to afford communities some level of safety, we find the dialogue and instruction relating to evacuation and/or shelter in place disturbing. We suggest that a far greater level of dialogue is needed at a community level, by engaging citizens, providing factual local information and encouraging them to make decisions and take responsibility themselves.

10.3 We have gone into detail about high fire fuels within the report. High fire fuel loads, without doubt, are the main reason contributing to civilian endangerment and we recommend that they are addressed over time, through community engagement and by holding landowners accountable for the fire hazards that they have created. There is really no other practical way to create a fire-adapted landscape. The community fire management planning process provides a methodology for coming to grips with this problem at a local landscape level. We encourage its use.

10.4 Our engagement with communities convinced us that the potential for community–based approaches to succeed in Portugal is very good. We recommend that this avenue of engagement is pursued and encouraged. We would like to continue with the training that we initiated by providing further support and training with the ultimate aim of building a corps of Portuguese trainers that could continue the work once we withdraw. Further input is required in order to embed the concepts and especially so, if the concepts are to be integrated into any national programme or protocol. In this case, we would recommend that existing Firewise training materials are adapted to suit Portuguese conditions; the risk and Hazard Assessment form is adapted to provide a single consistent standard for use in Portugal and that all materials are available in Portuguese. We would be willing to discuss the design, integration and coordination model that might be acceptable to Portuguese authorities, as by default, community–based initiatives require shared responsibility between civilians and authorities.

10.5 If not in existence, we recommend that a visitor safety charter is developed by the Tourism and Tourist Accommodation sector, addressing minimum shelter-in-place requirements, evacuation plans, wildfire ignition zone standards and fire weather information for tourists.

10.6 If not in existence, we recommend that a system of facilitated Round Table workshops is instituted in order to discuss and give substance to the Portuguese vision of Fire Adapted Communities

11 Conclusion

The actions inherent within the Fire Adapted Communities definition provide no guarantee that damaging fires will not occur in the future; the landscape will always need fire and we cannot dispute that future years will likely be warmer, fire seasons will be longer, fire fuels will continue to build up and fire suppression will still be needed. The real challenge relates to doing nothing to change the status quo and simply carry on with business as usual.

"Business as usual" has not been our impression during this contract. We experienced only co-operation and willingness from all authorities and citizens, along with exceptional Portuguese hospitality during our visit. There has clearly been much thought and hard work put into changing the status quo, following Portugal's devastating 2017 fires. Our hope is that the contents of this Report are useful in taking the next steps forward.

Val Charlton

Tessa Oliver

July 2018.

TOOL 1: INTEGRATED FIRE MANAGEMENT ROLES

The table below provides an overview of the functions and the respective roles and responsibilities of each stakeholder. Roles include project driver, support and informant. In the event that a stakeholder does not have the capacity (human or financial) to execute their role this can be delegated to another stakeholder.

Role	FPA	FMU	Land-owner	District & local Fire Services	WOF	Disaster Manage-ment	DAFF	Government Departments
Risk mapping								
Mapping of members	Driver	Support	Informant	-	-	-	-	-
Collection of other landowner information	Support	Driver	Informant	-	-	-	-	-
Translation of information on QGIS (FOSS)	Driver	-	-	-	-	-	-	-
Add layers to GIS with veld type, veld age, burn history, DM risk assessment, human and social, economic, ecological, etc.	Driver	-	-	Support	Support	Support	-	-
Standardise risk ratings	Support	-	-	-	Support	Support	Driver	-
Apply rating to data – expert or participatory	Driver	Support	Informant	Support	-	Support	-	-
Stakeholder organisation and communication								
Identification of relevant stakeholders	Driver 1	Informant	Informant	Support		Support	Support	Support
Mobilisation of private landowners into FPA	Driver 2	Driver 1	Support	Support	-	-	Support	Support
Mobilisation of state landowners into FPA	Driver	-	-	Support	Support	Support	Support	Support
Mobilisation of parastatals and servitude holders	Driver	-	-	Support	Support	Support	Support	Support
Mobilising local municipalities	Driver	-	-	Support	Support	Support	Support	Support
Guidelines for prioritising stakeholders – willingness, risk rating	Driver	Support	-	–	Support	-	-	-
Fire awareness information dissemination	Driver	Support	-	Support	Support	-	-	-
Database of service provid-ers to support members	Driver	Informant	Informant	Support	-	Informant	-	-
Fire management planning – protection, prevention and suppression								
Strategic: high level linked to risk mapping – annual review	Driver	Informant	-	Support	-	Informant	Support	-
Set minimum standards for fire prevention and readiness for members	Driver	Informant	Informant	Support	Support	Support	Support	Support
Risk reduction plan: fire belts – strategic and tactical, fuel load reduction – alien clearing, resource mobilisation	Support	Driver 2	Driver 1	Support	Support	Support	Support	Support
Controlled burns	Support	Support	Driver	Support	Support	-	-	-

Role	FPA	FMU	Land-owner	District & local Fire Services	WOF	Disaster Manage-ment	DAFF	Government Departments
Tactical: Local planning – FMU and landowner	Support	Driver 2	Driver 1	Support	Support	Support	-	-
Communication of fire danger rating	Driver	-	-	Support	Support	Support	-	-
Agree mechanisms for coordination of actions with adjoining FPAs	Driver	-	-	Support	Support	Support	-	-
Fire fighting resource identification and deployment plan	Informant	-	Support	Driver	Support	Driver if disaster	-	-
Pre fire season planning and post fire season debrief	Driver 1	Support	Support	Support	Support	Driver 2	-	-
Communication plan: awareness and operational	Driver	Support	-	Support	Support	Support	Support	Support
Detection and suppression								
Detection systems: landowner, AFIS, other	Driver 1	-	Support	Support	Driver 2	Support/ Driver	-	-
Reporting of fires: emergency number, system	Driver 2	-	-	Driver 1	-	Driver 1 (emergen-cies)		
Suppression plan	Support	Support	Driver 1	Driver 2	Support	Driver 3 (emergen-cies)	-	-
SOP and incident control: provincial standard to be applied for typing of incidents and resources	-	-	-	Driver 1	Support	Driver 1 (emergen-cies)	-	-
Handling of emergencies	-	-	-	Support	-	Driver	-	-
Training	Driver	-	-	Support	Support	-	-	-
Post incident debriefing and record-keeping / statistics	Driver 2	Informant	Informant	Driver 1	Support	Driver 1 (emergen-cies)	-	-
Rehabilitation								
Land rehabilitation	-	-	Driver	-	-	-	-	Support
Mobilisation of resources	Support	-	Driver	-	Support	-	-	Support
Reporting	Driver	Support	Informant	-	-	-	-	Support
Record-keeping and Monitoring & Evaluation								
Database: title deed	Driver	Informant	Informant	Support	-	-	-	-
Live membership database	Driver	Informant	Informant	Support	-	-	-	-
Fire statistics collation	Driver	Informant	Informant	Support	Support	Support	-	-
Contact directory	Driver	Informant	Informant	Support	Support	Support	-	-

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