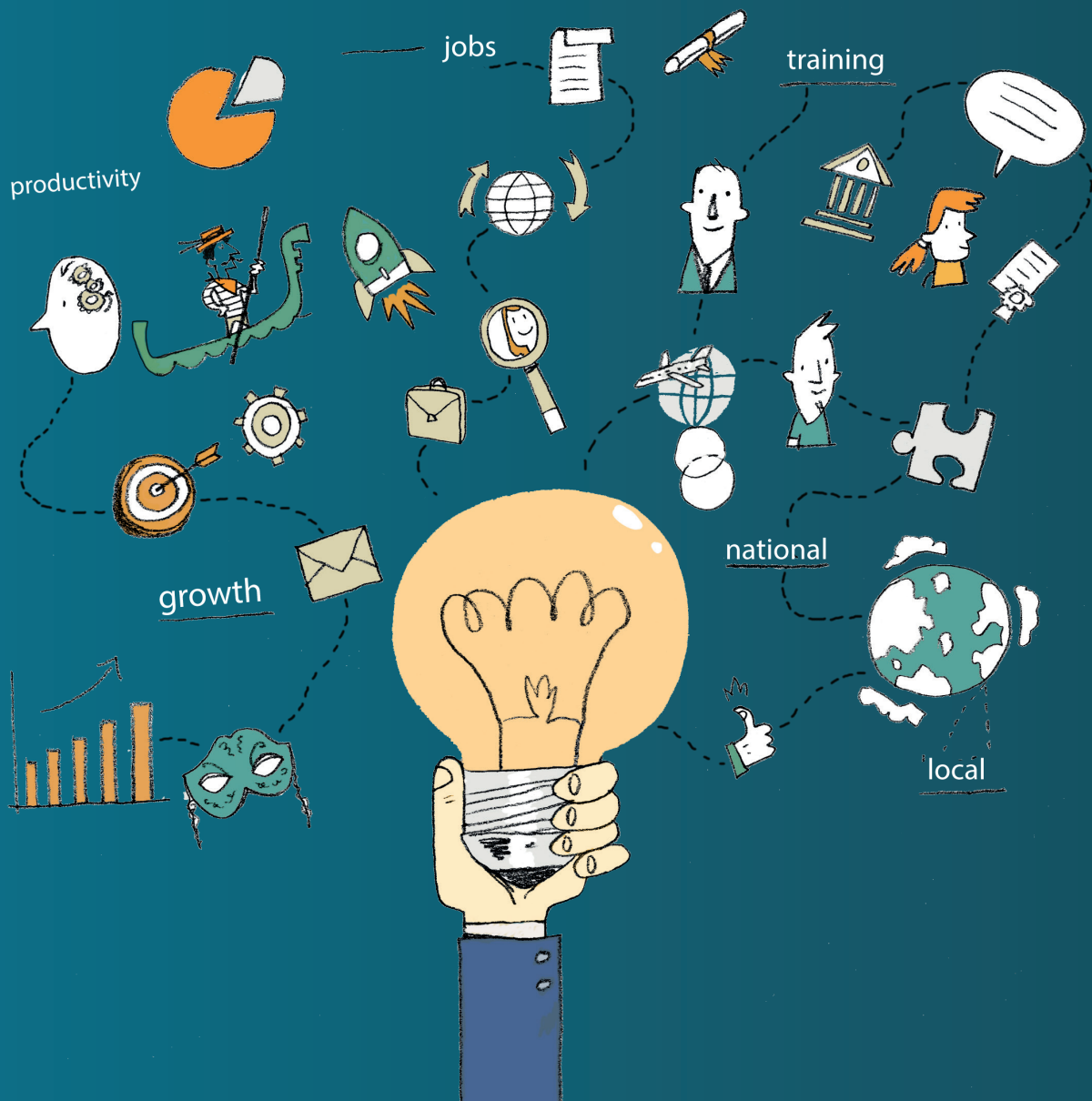


Museums and Local Development in the Autonomous Province of Trento, Italy



Museums and Local Development in the Autonomous Province of Trento, Italy

This case study considers the role of the MUSE network of museums for local development in the Autonomous Province of Trento, Italy. It considers the dimensions of local development featured in the OECD-ICOM Guide for Local Governments, Communities and Museums. The Guide provides a self-assessment framework for i) local and regional governments to assess and improve their approaches to maximise the social and economic value of cultural heritage as part of sustainable local development; and ii) museums to assess and strengthen their existing and potential linkages with the local economy and social fabric.

JEL codes: H41, O10, Z18

Keywords: culture, museum, cultural heritage, local development, Trento

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This paper was authorised for publication by Lamia Kamal-Chaoui, Director, Centre for Entrepreneurship, SMEs, Regions and Cities, OECD.

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Foreword

Museums and cultural heritage sites are powerful assets for local development. They can inspire creativity, boost cultural diversity, help regenerate local economies, attract visitors and bring revenues. There is also increasing evidence that they can contribute to social cohesion, civic engagement, health and well-being. For several decades now, cities and regions have been drawing on these assets to put in place heritage-led actions as part of their wider economic development strategies. National, city and regional governments, the museum community, and other stakeholders are increasingly interested in these issues.

New ways to measure the impact of culture and museums on local development are being sought in order to effectively channel public and private funding. The debate is shifting from only demonstrating the tax revenues, visitor spending and jobs associated with a museum's economic activity to also capturing broader social and economic impacts. These impacts include community development through improved social capital, urban regeneration, place branding, inclusion, well-being, innovation and creativity.

To respond to this demand, in 2018 the OECD's Local Economic and Employment Development Programme (LEED) and the International Council of Museums (ICOM) partnered to develop a *Guide for Local Governments, Communities and Museums* to inform and support policy makers and the museum community. It includes potential actions in five areas:

1. Leverage the power of museums for economic development
2. Build on the role of museums for urban design and community development
3. Catalyse culturally aware and creative societies
4. Promote museums as spaces of inclusion, health and well-being
5. Mainstream the role of museums in local development

Specific case studies on *Museums and Local Development* have been undertaken in a number of countries, including Italy, to identify opportunities for greater impact in the five areas highlighted by the OECD-ICOM Guide. This case study was carried out in 2018 in co-operation with the National Committee ICOM Italy. This case study considers the strategies of the Trento Science Museum MUSE to have an impact on local development, and on the related policies of the local government, the autonomous Province of Trento, Italy.

Acknowledgements

This project was led by Ekaterina Travkina, Coordinator, Culture, Creative Industries and Local Development at the OECD Centre for Entrepreneurship, SMEs, Regions and Cities. It was implemented in cooperation with the International Council of Museums (ICOM). The cooperation with ICOM was coordinated by Afsin Altayli, Museums and Society Coordinator, ICOM Secretariat.

This case study *Museums and Local Development in Trento, Italy* was coordinated by Ekaterina Travkina and Alessandra Proto, Acting Head, OECD Trento Centre for Local Development. Country work was carried out by Prof Chiara Dalle Nogare (University of Brescia, Italy). The research team would like to thank the MUSE – Trento museum of science as well as local and regional authorities and other stakeholders in Trentino who took part in interviews, responded to questionnaires and provided valuable comments and insights as well as statistical and qualitative data on diverse activities and projects. The team is also thankful to Michele Lanzinger, Director of MUSE, Claudio Martinelli, Director of the Department of culture of the autonomous Province of Trento, and Alberto Garlandini, President of the Italian National Committee of ICOM and member of the ICOM Advisory Committee, for their support in the development of the *OECD-ICOM Guide for Local Governments, Communities and Museums*.

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Executive summary

This case study considers the strategies of the Trento Science Museum MUSE to have an impact on local development, and on the related policies of the local government, the autonomous Province of Trento, Italy. The case study covers the five areas of the *OECD-ICOM Guide for Local Governments, Communities and Museums*:

1. Leverage the power of museums for economic development
2. Build on the role of museums for urban design and community development
3. Catalyse culturally aware and creative societies
4. Promote museums as spaces of inclusion, health and well-being
5. Mainstream the role of museums in local development

MUSE is the name of a network of the six scientific education centres in Trentino, an Italian province in the Alps and close to the border with Austria. In recent years, MUSE had an average annual budget of about EUR 16 million and 250 employees. The largest museum of the network is the Science Museum in Trento, the capital city of Trentino. This museum re-opened in 2013 in an iconic building designed by *archistar* Renzo Piano and is one of the most visited science museums in Italy. The rest of the network consists of a botanical garden, an astronomical observatory, a geological museum, a museum hosting pre-historic remains of a pile-dwelling site and a research station of inland aquatic ecosystems. The case study was conducted in 2018 and covers the museum's recent actions at that time¹.

Main findings

Various strategies are adopted by MUSE that aim to contribute to local economic development and to make Trentino more innovative. Such strategies show a commitment to sustainable development, with special reference to the natural environment. In this respect, a good practice is the museum's dialogue with the local agricultural sector to increase awareness on biodiversity issues. MUSE is well integrated in the area's tourism sector. It is also a service provider for the Trentino Guest Card, a very successful destination card offering free and discounted admissions to almost all local attractions. Finally, MUSE's FabLab (the only fabrication laboratory in the province), serves to implement the museum's strategies for increasing the number of innovative enterprises at the local level.

MUSE represents an exceptional element in the success of a vast urban regeneration plan. The museum also takes part in committees for the regeneration of rural contexts, such as Mount Bondone, a tourist destination seeking to renew itself and where MUSE is present with two of its research centres. MUSE Science Museum in Trento effectively uses spaces

¹ At the time when the case study was conducted, the Caproni aeronautics museum was also part of the network.

beyond the museum's walls for outreach to engage the local community, such as the green space around the Science Museum. Community development is a goal MUSE wishes to reach through numerous initiatives, many of which are also relevant for cultural development and inclusion. MUSE has been effective at increasing its impact by choosing a strategy only if it serves multiple purposes. MUSE's activism in international co-operation, particularly with a project on sustainability in Tanzania's rainforest, also seeks to contribute to the Trento community's self-definition as an altruistic and open society.

The museum seems to be truly committed to organising visits as experiences, and to quality *edutainment* (i.e. education through entertainment). Its strategies regarding education are particularly focused on families (including those with very young children) and schools. Outreach is facilitated by the presence of the smaller museums/research centres of the network, which are often located in rural areas, but also by the gardens and greenhouses surrounding MUSE's Science Museum in Trento. MUSE is also committed to interactive educational projects where the one-way approach to knowledge transfer is challenged through initiatives such as citizen science and responsible research and innovation (RRI) projects.

MUSE's commitment to social inclusion is focused on disability and youth not in employment, education or training (NEETs), in collaboration with local social co-operatives. One challenging project involves the mentally disabled as well as those with serious physical disabilities who serve as accompanying guides for groups of non-disabled visitors. Youth disengaged from education and the workforce are sought out to work in the museum's greenhouses, and soon will be managing a branch of MUSE's museum shop. MUSE does not engage in actions with an explicit goal of improving the health of its visitors. However, one of its most innovative spaces the Maxi Ooh section, dedicated to children aged 0 to 5 years and focused on senses, is (also) conceived as a space that contributes to early age prevention of mental health problems.

The Autonomous Province of Trento recognises in many official documents and the budget the important role of museums, and of MUSE in particular, as actors to foster local development. Re-opened in 2013, the new Science Museum involved a significant financial commitment from the Province to both build and, importantly, support ongoing operations. On average, the Province contributes about 55% of the budget. Given that a three-year budget has become compulsory for all levels of government and their agencies in Italy, the financial planning for the museum has become clearer.

MUSE enjoys an institutional status of great autonomy vis-à-vis the provincial government, which enhances its effectiveness in contributing to local development. It also takes advantage of the fact that most statistics on the local context are available online, given an open data policy implemented at the local level. Even more important, in *all* its domains of action the provincial government has a rather strong commitment, in financial terms, to a multidimensional notion of local development. This is made possible by the fact that Trentino is an autonomous province, therefore it can retain about nine-tenths of the tax revenues. This autonomy also facilitates public-private engagement, allowing MUSE to work with partners. However, the Science Museum would benefit from greater coordination between the different branches (departments, agencies) of the local government vis-à-vis the museum. Some of the coordination challenges may arrive from the varied visions by the different entities on the role of the museum and its future.

A recent provincial law reforming the governance of culture in Trentino has both pros and cons. The law defines in more detailed terms the goals that the provincial government assigns to cultural institutions, enlarging them so as to also include innovation, social

cohesion and well-being. However, the law also prescribes a transfer of museum employees to the provincial government, a limitation to the autonomy of provincial museums.

Opportunities for future action

There are a number of opportunities for the provincial government and MUSE to further capitalise on the already strong linkages between the two for local development. To further foster economic development, there are opportunities to increase innovation through museum activities. For example, the activity of the FabLab could be intensified by involving a larger number of start-ups and would-be entrepreneurs as well as established firms.

For what concerns the museum's role in education, it seems important to continue the efforts to offer quality exhibitions. In the short run, improvements could focus on reconsidering the outsourcing of some educational activities and the need to improve contractual relationships of guides, to encourage them to identify with the institution's goals and increase the motivation.

To expand inclusion, well-being and health, a collaboration with the local health agency could serve to identify possible opportunities (therapies and health education, social inclusion). A third party for the evaluation of results could be identified jointly with the local government to assess short-term and long-term results.

To continue to mainstream its role in local development, the museum could consider the range of local development dimensions in which it could participate. For example, it could review the budget structure so as to allocate expenditures to the prioritised dimensions of local development while at the same time avoiding the risk of a budget allocation in favour of revenue-generating activities, which are not necessarily those having the highest impact.

It could also restructure the corporate social responsibility report accordingly as well as enhance the vision and management capacity of all museums in the network to implement them.

In turn, the Autonomous Province of Trento would need to recognise the role of museums in fostering local development not just in cultural policy laws but also in documents dealing with local development more generally. This could include diverse areas such as industrial policy, tourism policy, urban planning, education policy, and health policy laws. The different branches of local government (departments, agencies) should share a vision on MUSE's role and future and co-ordinate in their relationships with the museum. As a concrete step forward, the provincial government could also facilitate a dialogue between the provincial health agency and the museum to co-design well-being and inclusion programmes.

One of the success drivers for MUSE has been the autonomy to design strategies. The museum remains the closest entity to understanding its visitors' demands. It would be important to ensure that the current status of the museum as an autonomous agency is understood and valued as a good institutional arrangement.

Introduction and study background

Context: history, politico-institutional framework, economy, cultural policy

Starting in the Middle Ages, Trentino was part of the southern part of the historical region Tyrol. It was therefore under the sphere of influence of the Habsburg empire, of which it was formally part from the Congress of Vienna (1815) till the end of World War I when it was then annexed to Italy. After World War II, the new Italian Constitution granted Trentino the status of an autonomous province due to the presence of German and Ladin linguistic minorities.

As a result and unlike in (most of) the rest of Italy, most powers there are exerted by the provincial government (the Autonomous Province of Trento). In the course of time, there has been an ongoing redefinition, typically enlargement, of competences attributed to the provincial government. Today, the role of central government is mainly related to the administration of justice and public order. The provincial government is responsible for health, schools, public transport and transport infrastructure, support to the local economy and culture. There are also around 176 municipalities, among which the cities of Trento (about 118 000 inhabitants) and Rovereto. Most of the other municipalities have fewer than 1 500 inhabitants. The total population of the province is about 530 000 (ISPAT 2016). Trentino's northern border is with a province of similar size and population, Alto Adige, with which it shares a common historical background and autonomous status. Veneto (Venice) and Lombardy (Milan) are the two densely populated regions bordering Trentino to the east, west and south.

Within Italy, Trentino is among the top performers on several economic indicators. For example, the Province is the third highest in terms of per capita GDP and second highest for its employment rate (ISTAT, 2017).

In 2017, agriculture produced 3.2% of Trentino's added value, industry 23.4%, and the remainder is found in services, among which a major role is played by tourism (ISPAT records 4 290 000 arrivals in hotels and similar accommodation facilities in 2017) and by government, mainly in local levels (about 37 600 employees in 2013: ISPAT, 2014). The agricultural sector focuses on the production of fruits (apples) and wine. Farmers are gathered in large co-operatives. Co-operatives are also important in the local financial sector and retail trade (supermarkets). The economic fabric is made of small and medium-sized firms, with few exceptions. The tourism industry depends on natural attractions, with a winter season dominated by winter sports, attracting a large number of foreign visitors, and a summer season in which lakes (Garda) play a big role alongside the mountain destinations (Dolomites).

Trento is Trentino's capital and by far the largest town with a high quality of life. It consistently ranks in the top five Italian cities for quality of life in Sole 24 Ore's ranking (5th in 2017), which comprises a large number of indicators considering factors such as private finances and consumption; employment and innovation; environment and public services; demography and society characteristics; crime and justice; culture and leisure.

Public policy has had a strong commitment to keep a balance between the urban centre and rural periphery of the province. There is a special focus on mountainous villages, where people can enjoy quality public services regardless of how successful they are as tourist destinations.

Primary public expenditure by local governments was on average EUR 8 664 per capita between 2012 and 2014 (Bank of Italy, 2016). The Autonomous Province of Trento can retain about 90% of the revenues (except municipal taxes) collected locally and spends it either directly or indirectly, through transfers to the municipalities. Public investments have been important since the 1960s, a time in which Trentino still had a rather underdeveloped economy: it ranked 67th among the 92 Italian provinces in 1951. Modernisation of Trentino was led initially by an industrial development phase, mainly aiming at fighting unemployment, coupled with huge public works such as the development of the road and rail Brenner axis, and was followed by increasing external demand for tourism and quality agricultural products. Nowadays, the provincial government is particularly committed to fostering innovation through ad hoc industrial policies and through grants to the local research institutions.

With respect to culture, the provincial government is by far the most important spending institution (about 63% of total expenditure) followed by municipalities. Provincial cultural spending was about EUR 138 per capita in 2016. The spending sub-category heritage and museums amounted to about EUR 18.7 million in the same year (Rapporto Annuale sulle Attività Culturali, 2017).

MUSE: history, institutional status and audience

In its actual institutional form, Trento's MUSE was born in 2011. A Trentino Natural Science Museum had been operating since 1964 as a public institution, and a provincial law (law n. 15, 2007) had prescribed its transformation into a Science Museum, "a cultural centre focused on natural history and mountain landscape, science and innovation". However, the regulation implementing that law only appeared in 2011 (decree n. 4-62). This regulation established the new museum's statute. The MUSE — the name chosen for the new institution — re-opened 27 July 2013. The collections of the old natural science museums were re-located in an iconic and environmentally-friendly building designed by *archistar* Renzo Piano. The permanent collection was enriched and re-proposed within a narrative path focused on ecology and sustainability. The museum is one of the attractions of a brand new city district, not far from the city centre, developed in a former industrial area that had been relatively abandoned since the 1980s.

MUSE is actually not just one museum, but a network of the seven scientific education centres of Trentino. As early as the 1990s, the provincial government had devised a unified management to obtain scale and scope economies in their management. Apart from Trento Science Museum and a small aeronautics museum located in the town's outskirts (Museo dell'Areonautica Gianni Carproni), the network also includes: a botanical garden and an astronomical observatory (Giardino Botanico Alpino and Terrazza delle Stelle) in Bondone, Trento's mountain; a geological museum in the East Dolomites (Geological Museum of the Dolomites); a museum hosting pre-historic remains of a pile-dwelling site near lake Garda (Museo delle Palafitte del Lago di Ledro); and a limnologic research station in the West Dolomites (Stazione limnologica del lago di Tovel).

From an institutional point of view, MUSE and its network is one of the four larger provincial museums. The other local museums are much smaller institutions and don't have the same degree of visitor attraction.

Provincial museums enjoy a quite autonomous status within the provincial government, as they are defined as separate “functional entities”, a legal definition close to the notion of an agency. Muse's statute assigns great powers to the director, while the provincial government is called to play a role as a stakeholder and supervisor mainly through an appointed council board that must approve the museum's plans and the accompanying financial documents (yearly and three-year budget) as well as the balance sheet. The board also nominates the director every five years. Nevertheless, in 2019, MUSE employees became public employees of the Province.

MUSE had a budget of about EUR 16 million in 2016. The Province of Trento contributed directly with about EUR 8.5 million, while the other revenues include ticketing (about 13% of the budget), and ticketing for educational activities (6%), European research grants and contracts for scientific counselling (9%), museum shop revenues (6%), royalties and rents (4%) and sponsorships (2%). The current expenditure transfers from the provincial government were stable at around EUR 5.6 million till 2012; followed by a significant increase in 2013-14, the first two years of the new Science Museum in Trento. As the museum started and increased its own revenues, the provincial government contributions have returned to their prior levels.

In 2017, the number of people working for MUSE was 254, out of which 219 having a contract directly with the museum (35 were long-term unemployed having a contract with publicly subsidized social co-operatives). Out of 219, 125 were collaborators without a long- or medium-term contract: most of these started in 2013, when the new Science Museum opened and it was not clear how many annual visitors it would receive in the medium term. The average age of the people working at MUSE is 37, of which 86% have a higher education degree.

MUSE's attendance is strong not only among provincial museums, but also among Italian museums nationwide. MUSE recorded 612 171 visitors in 2016, out of which 515 210 were visitors of the Trento Science Museum. This is by far the largest number of museum visitors in the province, with the second and third being Museo delle Palafitte (39 597 visitors) and the aeronautics museum Caproni (33 445)². It was the 12th most visited museum in Italy in 2016 according to *Il Giornale dell'Arte* (the Italian edition of *The Arts Newspaper*). Since the opening of the new Science Museum in Trento, the notable increase in visitors has remained rather stable, also thanks to many repeat visitors. For many tourists and excursionists, the MUSE Science Museum has become a major motivation for a visit to the city of Trento, especially for schools coming from nearby regions. Nevertheless, foreign visitors remain relatively limited (6% in 2016).

There are no harmonised and official measures of visitor satisfaction scores, however on a few alternative measures MUSE performs well. Tripadvisor scores are a source of information. The MUSE Science Museum scores 4.5 out of 5 (4 586 reviews, October 2018). In comparison, Caproni museum's score is also 4.5 and that of Museo delle Palafitte 4. MUSE Science Museum ranked tenth in the Tripadvisor's 2016 Traveller's Choice Museums for Italy. The score reported in *Il Giornale dell'Arte* considers the quality of a number of features (building, accessibility, visibility, lighting, attendants, bookshop, lifts,

² In 2016, the aeronautics museum Caproni was part of the MUSE network.

cafeteria and toilets) assessed by a mystery guest specialised in museum reviews. According to this source, MUSE ranks among the top 4 of the more than 100 Italian museums reviewed since 2009, with a score of 9.6/10.

MUSE also conducts research, which can contribute to local development above and beyond its exhibition. MUSE has a rich research programme and a large number of contracts for monitoring and studying natural sites. In the research area, long-term collaborations with several Italian universities make it possible for PhD students and other young researchers to work on their projects at the MUSE Science Museum. Such students are not counted as employees or collaborators in those statistics, but they serve as a positive form of outsourcing of some of the environment monitoring tasks the museum pursues. These collaborations also contribute to the large number of publications involving MUSE researchers as authors or co-authors: 60 on ISI (International Scientific Indexing) journals in 2016, and 67 papers presented at conferences.

Methodology

This case study was conducted in 2018. It focuses on assessing the impact of MUSE's actions on local development, and of the support of the local government (the provincial government) to the museum's strategy. Local development is assessed from different perspectives, notably the five dimensions covered in the OECD-ICOM *Guide*:

1. Leverage the power of museums for economic development
2. Build on the role of museums for urban design and community development
3. Catalyse culturally aware and creative societies
4. Promote museums as spaces of inclusion, health and well-being
5. Mainstream the role of museums in local development

Interviews with qualified representatives of the museum and of the local government were conducted using a predefined grid of questions. The answers have then been translated from qualitative information into a quantitative scale. A validation through unstructured interviews to local stakeholders was part of the exercise (see a list of those interviewed in Annex 1). This report has been compiled also using information coming from financial documents and other written materials provided by the museum as a complement to the interviews.

The provincial government's role in the different policy domains relevant for this case study are represented by different branches and agencies. In particular, culture and education are covered by dedicated departments. Tourism is mostly addressed by a company, Trentino Marketing, the main shareholder of which is Trentino Sviluppo, the local development agency to which most competences on industrial and innovation policy are assigned. Health is the domain of ASSP, another public agency, while APPA is the provincial agency for the environment. Research and higher education is managed by the University of Trento, provincialised in 2011, and two foundations, Fondazione Bruno Kessler and Fondazione Edmund Mach, which, though separate entities, are mostly funded by the Autonomous Province of Trento. Often public agencies and institutions create companies or consortia among themselves. This is the case of Trentino Sviluppo, the University of Trento and the two foundations, who have recently created HIT, the Trentino Innovation Hub, whose aim is to ease the transition from research to research application.

1. Leverage the power of museums for economic development

In addition to preserving and creating cultural value, museums contribute to local economic development through job creation and revenue generation related to the visitor economy. More long-term benefits can arise from partnerships between museums, local entrepreneurs, businesses, and higher education and research institutions that support the dissemination of new technologies and the creation of new products. Potential impacts include:

- New jobs and revenues through increased local attractiveness for tourists, talent and firms.
- Dissemination of new technologies, the creation of new goods and services, and support for creativity.

MUSE adopts various strategies aiming to contribute to local economic development and make Trentino more innovative. There is a high degree of awareness as to the role a science museum may play in these two domains. In terms of economic development, there is a commitment not only to development, but to *sustainable* development, with special reference to the natural environment.

The strategies within this dimension may be categorised into three groups:

- Strategies focused on the museum's contribution to the local tourism sector.
- Strategies aiming to help the agricultural sector reflect on sustainability issues.
- Strategies adopted by the museum's FabLab.

The following three subsections cover these three domains of actions separately, and all of them include the corresponding role played by the local government.

Tourism

MUSE is a well-integrated attraction in Trentino, which itself has a strong tourism focus (4.6 million tourist arrivals in 2016, excluding secondary residences). MUSE management monitors tourism data regularly, both those referring to the city of Trento and those relative to Trentino in general. The data are made available online by the provincial government twice a year, 3-4 months after the end of the winter and summer seasons. The museum is systematically involved in the round tables organised by the networks focused on the development of Trentino's tourism, comprising both public and private partners (hospitality industry associations, single hotel owners).

MUSE takes decisions about its offer (timetables, types of guided visits, auxiliary services) bearing in mind the desires and needs of tourists and excursionists. Excursionists constitute an especially important audience for Trento's MUSE, because it is the destination of a very large number of one-day school trips from Trentino's neighbouring regions. As for tourists, Trento's Science Museum has managed to become, since the re-opening in 2013, a must-do for most tourists visiting the town and often the main motivation for a visit. As for the

tourists staying outside of the main city Trento,³ MUSE is often both the local museum (MUSE's peripheral branches) and the iconic museum nearby, well worth a visit on a rainy day or on the way back home.⁴ In this respect, MUSE's integration in the destination card called Trentino Guest Card, which allows for a free visit, has been very important: in 2016, 9% of all admissions were Trentino Guest Card (TGC) admissions. This destination card includes more than 200 free or discounted activities around Trentino, among which all the most important natural and cultural attractions. A detailed account of the Trentino Guest Card project and MUSE's financial involvement, which is a good practice in tourism destination management, is described in Annex 2

The attention MUSE pays to the financial consequences of its integration into the TGC illustrates MUSE's keen awareness of the relationship between tourism and culture. Cultural institutions must be financially rewarded for the positive externalities in terms of tourism spending that they generate. In this respect, the museum is also attentive to private initiatives as well. A restaurant that had launched a MUSE special menu without involving the museum was invited to join a co-marketing campaign, or the museum would sue the restaurant.

MUSE benefits from a good governance structure of the tourism sector at the local level, a context in which the public and the private components interact fruitfully. Trentino is an autonomous province and all administrative powers with respect to tourism are delegated to the provincial level of government. It set up a public company, named Trentino Marketing, to design and implement most tourism policies. The province is divided into different tourist areas, each having their own local tourist board (Azienda di Promozione Turistica, APT hereafter). APTs are public-private institutions in which (most of) the local tourist entrepreneurs are involved, both as contributors and as decision-makers: the share of affiliated hotel-owners is above 90% in all tourist areas. Trentino Marketing acts as an umbrella with respect to the local APTs for the promotion of quality standards, tourist product clubs and common marketing strategies both in Italy and abroad.

In addition to the Trentino Guest Card, Trentino Marketing has also promoted The Sounds of the Dolomites. This is a program of readings and open air classic, jazz and world music concerts taking place in high mountain areas during the summer. Most local tourist boards, coordinated by Trentino Marketing, are involved in the Sounds of the Dolomites. MUSE was involved in this project, too: its guides to accompany groups of participants to the concerts' venues explaining the peculiarities of the natural surroundings.

A portion of Trentino, the Dolomites, are part of a UNESCO-listed natural site. A foundation involving relevant local stakeholders has been set up to coordinate all preservation and cultural dissemination actions regarding the site. An interesting project, called New Tale, started in 2017 as a collaboration between the UNESCO Dolomites Foundation, Trentino Marketing and MUSE. The beneficiaries of this action are hotel owners and their staff, who are given courses on a new narrative about the Dolomites. The idea is that they will then use it in the communications with their guests to make them more aware of the uniqueness of this natural environment. MUSE's research line on landscape is here of particular relevance, as landscape is both a natural and cultural notion that

³ Most visitors don't stay in the city of Trento, as Trentino is mainly a mountain and lakes destination.

⁴ This is especially true for tourists coming from other Italian regions. Foreigners account for 6% of MUSE's visitors, while foreign tourists account for about 36% of all Trentino's visitors in 2016 statistics.

captures well the interaction between nature and man's intervention, a feature shaping Trentino's identity also in touristic terms.

Communicating sustainable development to the agricultural sector

MUSE's research team is particularly focused on ecology, with biodiversity and sustainability at the local level being the main concerns. This implies collecting data, creating integrated databases, ongoing monitoring and elaboration of interpretations and recommendations. This work is also published in scientific articles, often in prestigious international scientific journals. The pure research agenda goes hand in hand with a cultural dissemination agenda, though the two are managed by different museum units. Another section will discuss MUSE's commitment to convey sustainability goals to its visitors; while this section will focus on its efforts to establish relationships with the agricultural sector so as to condition their choices in matters such as use of pesticides, dung disposal and, more generally, the vision on how their business should evolve.

The goal is to show that preservation should no longer be seen as a matter only for natural reserves. Most of the environment is man-made or man-modified, and this has been the case for centuries. The question is whether an equilibrium can be found between economic objectives and ecologic sustainability, considering that a cultivated field can also be the home of different botanical species and of wild fauna.

Some of Trentino's valleys are characterised by intensive farming. Trentino's most famous products are apples and wine, but animal husbandry is also widespread.

In general, producers are small businesses, but most of them are gathered in a few large cooperatives who are big players at the national level in the respective markets. Not only do cooperatives act as marketing agencies, but they also strictly monitor product quality, which means they dictate farming strategies in detail to their members. This makes them the ideal interface between MUSE and the farmers.

MUSE's staff highlights that the dialogue with the fruit producers is positive. Cooperatives work with MUSE to help them improve on their good practices. They are fortunately not trying to participate in "green-washing", whereby their association with the museum would compensate for unsustainable practices. The strong ties between the local policies regarding farming, the environment department of the Province and the activities of the cooperatives facilitates this dialogue with MUSE.

The situation is more challenging with breeders, who appear to be less open in general on how to make their business less harmful for biodiversity. Breeders are also strongly opposed the presence of wild carnivorous animals, some of which have been re-introduced (bear) and some of which (wolf) have reappeared again after more than a century. MUSE co-ordinates research, preservation and communication projects involving various Alpine regions from different countries focused on these mammals, and it is especially committed to clarifying the true dangers their presence entails.

MUSE has also started researching on the consequences of ski slope management on the environment. Ski slopes are crucial for winter tourism, but the increasingly common use of artificial snow means collection of water at high altitudes, altering the ecosystem. MUSE's staff is starting a relationship with the companies managing ski areas, building on the successful mode of the relationship with farmers.

MUSE's FabLab

Trento's Science Museum hosts a FabLab to increase the number of innovative enterprises at the local level. FabLabs (digital fabrication laboratories) are set up to inspire people and entrepreneurs to turn their ideas into new products and prototypes by giving them access to a range of advanced digital manufacturing technology (3D printers, laser cutters, etc.). MUSE's FabLab is the only one in Trentino, and it is at the head of a network of FabLabs in nine countries of central Europe (Interreg Central Europe FabLabnet), the activities of which are also financed by the European Regional Development Fund (EUR 2.7 million for the period 2016-2018). MUSE's FabLab is also highly connected with other initiatives promoting innovation at the local level set up by the local government and the local university.

MUSE's FabLab is located among the exhibits of the museum. This has pros and cons. Clearly, the laboratory cannot operate fully, for security reasons, while the museum is open for visitors. On the other hand, the location creates interest and curiosity for the FabLab among the audience – this means reaching very large numbers.⁵ Some specific events, such as Arduino Days and Hackathons, draw further attention to this technology infrastructure.

The FabLab has its own website and, within the FabLabnet initiative, launches calls for coaching programmes directed at students, would-be entrepreneurs and start-up companies. There have been three actions so far.

Pilot 1 action, Digital Transformation Camp, was for IT students and involved local entrepreneurs, mainly to explain their experiences as case studies. These examples were actively sought out by MUSE staff, often in traditional sectors. Four were selected and two finally accepted to be involved.⁶ The idea was to produce benefits both for students and for entrepreneurs. The former were asked to imagine innovative products and processes considering all the constraints that the technicalities of real production impose. The entrepreneurs were often exposed to the very idea of innovation through digitalisation for the first time. Network creation, especially with the tutors, was an extra bonus for all involved.

Pilot 2 action, FabLab2industry, is an ongoing initiative directed at entrepreneurs seeking to create a start-up. During a 2-month training course, they can use the FabLab to create and refine their innovative products, meet experts in prototyping and learn from financial consultants specialised in venture capital (two specialised consulting firms from a more industrialised neighbouring region have been involved to deliver these last two training modules). The call attracted interest nationally and four business ideas have been selected. They correspond to four groups of innovators variously composed of PhD students, young entrepreneurs, and even members of the museum staff in one case. The business ideas include: an automated system for managing vertical gardens, a portable lab for genetic analyses, a modular electronic kit for composing edutainment instruments, and a monitoring system for air quality using low cost sensors and shared online information. The participants to FabLab2industry will compete for visibility: some of them will go on a tour in some of the other FabLabs of the central European network with their business ideas.

⁵ Visitors can actually work in the Fablab on Sundays on very simple projects, under the supervision of tutors. Upon request, simple workshops are organised for schools.

⁶ One produces honey, the other high quality copper pans.

Pilot 3 action, *MakermeetArtisan*, is focused on local small artisan enterprises, often resistant to innovation. MUSE pro-actively sought out entrepreneurs to participate. The idea here is that even if the action may not result in new products, at least it will increase the awareness by small local firms of the necessity to innovate to compete successfully.

FabLab is run by both permanent staff and external consultants. Indeed external participation is important considering that the profile of a tutor requires an active involvement with industry. It mostly relies on European funds for its actions. Ideally, any public support should be complemented by financial commitments from the local chamber of commerce, industry and artisan associations, as they are the direct beneficiaries of the specialised services and networking the FabLab offers (almost) for free. One limitation of the FabLab's actions so far has been the involvement of a limited number of participants, despite the outreach by MUSE staff. The small number of firms participating may be due to several factors. Successful start-ups are a very small percentage of all innovative business ideas. This is also a completely new initiative, especially at the local level, and may require more time for greater visibility. It is important that the incubated business ideas, even when coming from non-local entrepreneurs, will find locally a favourable environment in which to locate and grow. MUSE's FabLab is part of the Province's strong innovation policy. The Province finances the main research centres of the region: University of Trento, FBK Foundation (mainly ITC and new materials) and E. Mach Foundation (agriculture, food, environment), as well as the local development agency of the Autonomous Province of Trento, *Trentino Sviluppo*, which is the provincial government branch for industrial policy. Recently these four organisations have joined forces and created a company, called HIT (*Hub Innovazione Trentino*) to empower their capacity to transform research products into business ideas. HIT actually has a triple mission: foster common projects, ease patentability and connections to firms, and use education to promote innovation. Of particular relevance within the last mission is the role of University of Trento's *Contamination Lab*, a multidisciplinary didactic initiative centred on problem solving and team networking. Though focused on the University of Trento's students, the *Contamination Lab* recently won a competitive grant of EUR 300 000 from the Italian Ministry of Education,⁷ and is therefore now open to all actions centred on education to entrepreneurship. HIT is then the frame within which MUSE's FabLab and the *Contamination Lab* meet and arrange collaborations in which each contributes to the partner's own initiatives.⁸ The University of Trento does not have its own FabLab but does have a prototyping laboratory, therefore the two infrastructures are clearly complementary.

The provincial government is also active in promoting Trentino as an attractive location for innovative firms. It has invested in the infrastructure of a mechatronic pole in Rovereto, and it is committed to ease the relocation or start-up of new, innovative companies by reducing the bureaucratic burden to firms in terms of regulatory compliance, a very relevant issue in the Italian context. The commitment of the provincial government to innovation is high. At the same time provincial museums have great autonomy in determining their strategies. A more direct involvement of the Autonomous Province of Trento in the operations of its museums is envisaged in law 15, 2017, reforming the current institutional arrangements regulating the relationship between the museum and the provincial government.

⁷ This subsidy has been granted for the Lab's next three years of activity.

⁸ These collaborations are often regulated by a contract.

2. Build on the role of museums for urban regeneration and community development

Museums are places that contribute to both the physical and social design of many cities. Their renovation or construction can stimulate urban regeneration and bring new life into areas losing their social dynamism and traditional economic base. Museums appear to be places where social capital can be built between people of different communities when many traditional meeting places are disappearing. Potential outcomes could be:

- International branding and increased territorial attractiveness.
- Economic diversification, new jobs and revenues through the development of cultural and creative quarters.
- Better quality of life.
- Higher level of social capital.

The role of MUSE in urban regeneration

In 2013, Trento's Science Museum moved from a 17th century palace in Trento's town centre, which was not very suitable for conservation and exhibition, to an iconic building in a newly developed district built on a large ex-industrial site (Le Albere). This innovative urban regeneration project involved both public and private capital and was commissioned to the workshop of *archistar* Renzo Piano, who conceived a brilliant reconversion from brownfields to greenfield and designed all buildings. The complex includes 300 apartments, 27 000 square meters of offices and shops, the Science Museum itself and a conference centre later turned into a university library. Construction followed the principles of eco-sustainability.

The result of this redevelopment project is an impressive new skyline and one of the best parks in town, albeit most apartments and some shops and offices are still unsold. This is due to a number of factors, two of which are the strong effects of the 2008 recession on the real estate market and the lack of some basic infrastructure (schools, parking places).⁹ The new district was built mainly of up-market apartments, while the demand for them may not have matched. Within this, MUSE's boom since its opening as "the new MUSE" represents an exceptional element of success of the initiative, and an opportunity to draw attention to the urban regeneration project itself, even in marketing terms.

Tripadvisor reviews reveal that the iconic building and the brilliant inner organisation of spaces are among the museum's best-liked features. The MUSE director collaborated actively with Renzo Piano Building Workshop in the planning phase, and so the building is both a piece of stylish architecture and the answer to the many demands of the museum institution. Some of these were actually the community's demands: in fact, MUSE

⁹ The neighbourhood is next to the town centre, but separated by the railways. In the original new urban plan, the railways, which cut the town in two would be transformed into subway railways. Lack of funds made this project unfeasible. This reduces Le Albere's proximity to local facilities and services.

organised a survey on the desired features of the new museum, involving a large number of local residents. For instance, the extension of the area dedicated to activities targeted to very young children came as a consequence of the consideration of the community's needs in this respect (see also Section 3). The bottom-up approach in the planning phase has probably contributed to the success of the new MUSE.

Paradoxically, the quality of MUSE's building and its location within a stylish new urban district are among the causes of MUSE's most important problem: congestion. The museum was expecting a yearly average audience of about 200 000, while its success was such that the actual figure is more than double. High demand does not refer just to visitors. MUSE's iconic building has generated a strong demand for meeting and conference rooms to rent by private firms and other local institutions, but spaces of this kind within the premises are not as many and as large as needed.

One option MUSE has exploited to overcome some of these problems is the expansion outside its currently built premises. The large green area just outside the museum was originally conceived as an Italian garden, but it was soon clear a lawn was more suitable for the organisation of events and for the resting needs of visitors; it now hosts also some of MUSE's mechanics toys. The outer physical spaces have been exploited also as an opportunity for outreach and for social inclusion projects, such as MUSE's vegetable gardens and greenhouses (see more in Section 4), which also host laboratories for schools.

MUSE strives to ensure that each project serves multiple purposes: for example many projects co-exist involving the vegetable gardens, some of which are meant to make them financially sustainable. They are the focal point of a three-year partnership with Ricola Italia, the national branch of a Swiss producer of natural herb candies. In 2018, the project, which includes co-marketing campaigns as well as a contest for schools focused on biodiversity, was awarded a prestigious national award, Premio Cultura+Impresa 2017-18.¹⁰ Ricola and MUSE have extended their collaboration also to the Botanical Gardens at Viote, on Trento's Alp Mount Bondone. A path dedicated to healing plants and herbs was set up, an initiative in which Ricola did not just play the role of a sponsor but collaborated actively.

Mount Bondone, part of Trento's municipality, is a mountain resort suffering competition with nearby destinations, therefore efforts have been made to better develop facilities and infrastructure. Improving Mount Bondone's competitiveness is one of the municipal government's goals, and special funds and programming skills have been allocated to this project. As MUSE is present on Mount Bondone with its botanical gardens and an astronomical observatory, its director has been actively involved in the committee for this regeneration plan. As a network of museums scattered throughout the territory, MUSE, is also engaged in regeneration efforts in non-urban contexts. It also reveals the generally good relationships with Trento's municipal government. While even MUSE is part of the provincial administration, three of its sites (the Science Museum, the Botanical Garden and the astronomical observatory) are located in Trento. The new MUSE's plans to expand its premises further finds some resistance on the municipal level as well as by the provincial government (see end of this section).

¹⁰ The awarding committee, set up by a well-known non-profit institution, Federculture, identifies every year a best practice in sponsorships and partnerships between cultural institutions and firms.

MUSE and community development

A museum's participation in urban regeneration plans has higher impact if associated with a commitment to community development. MUSE sees itself as a catalyst of creativity and of reflection upon common values within the local community. It seeks to promote creative thinking and innovation through the strategies of MUSE's FabLab (Section 1). Its educational approach favours co-creation of experience and learning, such as through citizen science and responsible research and innovation (see more in Section 3). Its social inclusion programmes (covered in Section 4) contribute to the development of social capital. The very contents of MUSE's education programmes, especially those on environmental sustainability (see Sections 1 and 3), contribute to making the local community aware of the problems and challenges of today's world, with reference both to the local and the global context.

There are two more aspects of MUSE's commitment to community development that could be mentioned, the first concerns combatting misinformation. In this era of fake news and the strong power of social media, people often receive alarming and confounding information. Are vaccines dangerous? Are wolves a threat for the Alpine communities? A natural science museum is the perfect institution to set the record straight on a large number of issues, and MUSE plays this role not just at the local level, but at the national one – the national press often refers to its research programmes and exhibitions on hot themes.

A second aspect of MUSE's commitment to community development revolves around its project in Tanzania. In 2006, MUSE and TANAPA (Tanzania National Parks) set up a collaboration for the monitoring of the Udzungwa Mountains ecosystem. Over time, this collaboration has increasingly included community development goals. The project is co-financed by the Natural History Museum of Denmark. One of the recent actions also involves a local for-profit partner, Dolomiti Energia, with a co-marketing strategy. Every year this multi-utility company will donate to MUSE EUR 10 for every TanzaMIA contract signed with its customers for electricity or natural gas supply¹¹. With this money MUSE will buy new, efficient ovens for Tanzanian families. In fact, one of the problems in Tanzania is the destruction of large parts of the rainforest by the locals who need wood to cook. MUSE's commitment in Tanzania is not only a commitment to the communities living near the national park, but also is a commitment in shaping its visitors' awareness that sustainable development needs global action. A large greenhouse hosting plants coming from Udzungwa Mountains is part of the permanent exhibitions in the new MUSE. MUSE's activism in international co-operation also tries to contribute to Trento community's self-definition as an altruistic and open society.

The role of the local government

The new MUSE stands out as the real added value of the regeneration plan for the city. But MUSE appears to be a victim of its own success: its premises are too small for the number of visitors it attracts. In the beginning, many thought these numbers were just the frenzy of the moment – everyone had to go and have a look at the new museum. Instead, the audience has remained high since 2013, the year the new MUSE opened. The municipal government has made the nearby green space available, and this has alleviated some of the congestion problems. Yet there is still a need for more space. There are three possible extensions of premises: the nearby Palazzo delle Albere, an underused Renaissance villa belonging to the provincial government; a house now in ruins, close to the nearby railways, belonging to the

¹¹ For further information: <http://www.tanzamia.it/> (in Italian)

municipal government, where the FabLab could be relocated; and a brand-new astronomical observatory on (part of the) lawn in front of the museum. While the latter plan may come to fruition, the first two are not currently supported by the governments owning the premises. The public sector has made massive investments in MUSE and additional resources for new space may not be forthcoming for several reasons (shrinking provincial budgets, other provincial museum investments).

A second element that has reduced MUSE's local development impact is the loss of one of its branches in the network. The provincial administration transferred the Caproni museum out of the MUSE network and assigned it to Fondazione Museo Storico, a provincial cultural institution focusing on local history. This small museum hosts a collection of old airplanes produced by a local firm at the beginning of the XIX century. It is located far away from the new Science Museum and had about 33 000 visitors in 2016. A private donation has allowed the provincial government to buy Caproni's firm archive, and the idea is to change the nature of the museum, making it more a place where visitors can learn a piece of local history.

The provincial government has included in its recent law reforming the governance of cultural institutions (law no.15, 2017) references to the themes of innovation and social cohesion. The law recognises that these themes should be goals for cultural institutions, which reinforces their local development mission. At the moment, the museum enjoys an institutional arrangement by which the provincial government is not authorised to influence how it reaches those goals. Provincial museums are autonomous, i.e. they are the agenda setters in cultural programming, while their council boards, representing the link between public authorities and their management, approve it. This setup, which makes decision-making close to the real needs of the community as perceived by the very providers of cultural services, is common to many public museums in Italy. However, the same law, seems to point to a new model in which provincial museums will be made less autonomous. The museum sees in this a threat on MUSE's future, also as far as its commitment to innovation and enhancement of social cohesion are concerned.

3. Catalyse culturally aware and creative societies

Museums have mainly been created to increase cultural awareness and education. With time, this objective has become more complex to also encompass training and life-long learning, and not only for native-born populations but also immigrants and other marginalised communities. A museum's mission is also to promote reflection and self-awareness by providing opportunities to audiences to learn more about their environment and themselves through museum collections. They can change the way people think about many past and contemporary issues and can challenge misperceptions and rigid modes of thinking. By displaying an inventory of past creativity, museums help promote an understanding of why and how things have been created. In that sense, they may promote a broader culture of creativity.

Potential outcomes include:

- Knowledge development and upskilling.
- Increased levels of self-confidence.
- More culturally aware and open communities.
- Diffusion of creativity.

MUSE work in this area is considered in two different ways:

- Education and cultural dissemination is a goal in itself, a core mission of the museum.
- It is instrumental to achieve environmental sustainability.

As for the first dimension, the idea is not to convey single pieces of information, but to help the audience develop curiosity and awareness of the need of a scientific approach towards a number of issues. Instead, she should ideally look for further information elsewhere, to use other respected sources of knowledge. A visit should be conceived as a nudge, and what follows should be a process of creative self-education and not simply validation (such as found in online virtual tours),

The museum seeks to raise awareness to induce behaviour change of the local audience towards a long-term equilibrium with the natural environment. This is particularly relevant in the Alps, a context in which anthropisation¹² coexists with a fragile ecosystem and where climate change adds new problematic aspects to the relation between economic activities and biodiversity. It is interesting to note that MUSE pursues this goal not just through actions targeted to their visitors, but also through the establishment of relationships with various trade associations, especially within the agricultural sector (see Section 1).

MUSE's commitment to education in sustainability matters directly stems from its history as a natural science museum. However, MUSE's ambition is to shape its identity as a

¹² The conversion of landscapes and natural environments by human action.

science museum, so its educational activities also cover topics such as health and lifestyles (of which more in Section 4) and new technologies (see prior Section 1).

To reach its educational goals, the main strategy of MUSE consists of a commitment to quality visits to its collections and exhibitions. Trento's MUSE had around 515 000 visitors in 2016; 612 000 when including all the network members. This makes MUSE one of the most visited science museum in Italy, and among the most visited Italian museums of all types: according to the Arts Newspaper it ranked eleventh in 2016. Its educational goals are not restricted to the local visitors from the province, which are a small minority (20% in 2016). The vast majority come from outside of the province given its smaller populations relative to southern neighbouring regions and its strong tourism sector.

MUSE's strategies aimed at increasing its visitors include the organisation of events which can be categorized as *edutainment* ("Mystery dinners" is just one of the latest formats) and attempts to use new languages, such as contemporary art, to communicate science. Most of all, it relies on the connection with other educational organisations. In Italy, museums have recently been recognised as institutions where teacher training can take place, and accordingly MUSE has set up a variety of courses, summer schools etc., both in Trento and in some of its peripheral venues. MUSE also offers training courses focused on educational services to other museum institutions. There is also a connection with the local University of the Third Age¹³; one of the proposed activities in this case is a citizen science project focused on bird watching.

MUSE has several additional means of supporting education. An interesting project, connecting educational and social inclusion goals, is a project involving disabled people as complementary guides at Trento's MUSE on Sundays (see more in Section 4). In addition, high school students are allowed to help in cultural dissemination tasks while on job training (*Alternanza Scuola-Lavoro*, see more in Section 5). Since they choose to allocate their time for job training at MUSE, they can be considered as volunteers; the same can be said for youth in their civil service.

Exhibiting the permanent collection and offering temporary exhibitions is just one of the means used by MUSE to foster cultural development. The museum has taken advantage of the recent move to the new, much larger and better-organised building to create spaces other than those dedicated to permanent and temporary exhibitions. In addition to laboratories, particularly dedicated to schools and groups, MUSE has informal education spaces for children. One is Maxi Oh, dedicated to very small children (see more in Section 4). The other is the Discovery Room, conceived for slightly older children (5 to 10 years old). It is a room where the playful coexists with the instructive. It is a space in which the immersive gallery "Explore the wood" lies beside chests of drawers full of replicas of items in the exhibits (animals, plants, bones) that children can observe and manipulate. It is a place where interactive technological tools as well as soft toys are present. A mediator¹⁴ is present on week-ends to facilitate the experience.

Educational outreach projects actively make use of MUSE's gardens (see Section 2) and through its role as head of a network of local natural and archaeological museums. These museums are tightly connected to natural or cultural landmarks and set in the local

¹³ The *University of the Third Age* is an international movement whose aims are the education of mainly retired members of the community.

¹⁴ Mediators are the intermediaries between the artists, their works and the general public.

environment. The museum in Ledro, which focuses on the local remains of bronze age stilt houses, is committed to performances recreating the life of their pre-historic inhabitants.¹⁵ The show “Living Prehistory” has not just been performed there, but it was also on tour around Italy and also in Austria. In other educational activities at the Ledro museum visitors can be part of a theatrical representation, and they can mould clay, create objects, etc. Predazzo’s geological museum organises guided hikes for locals and tourists to explore the area and understand its unique geological features. The role of MUSE in the Provincial Ecological Network (see later in this Section) is often an occasion for the museum to reach the residents of remote villages and establish relations with them. Finally, there are single actions that MUSE organises on a regular basis as well as occasionally and that can be considered part of its outreach strategy. For example, on World Biodiversity Day (21 May 2017) MUSE organised a Bioblitz at Lamar Lake (part of the Provincial Ecological Network): 24 hours dedicated to mapping the biodiversity of the site with the involvement of the local community. Around 100 participants were given an opportunity to learn a mapping method, use technological devices (such as bat-detectors) and validate the information posted online before passing it to the GBIF (Global Biodiversity Information Facility) database.

MUSE is also committed to educational projects where the top-down approach to the transmission of knowledge is challenged. These initiatives pertain to the following dissemination domains:

- Citizen science.
- Responsible research and innovation (RRI).

MUSE implements the recent worldwide trends in scientific education through these programmes. In the case of citizen science, however, it is a vocation MUSE inherits from a distant past. Since its beginnings, the museum has a mutually beneficial relationship with Trentino’s Society of Natural Sciences, composed of amateur scientists. The challenge is, however, to reach the new generations. The multi-year project “The School of Ants”, by which young students monitor the population of ants in their schoolyards and report their findings to a national online database, has include 16 classes in the 2016-17 school year, both in Trentino and in three neighbouring provinces. The project, started as the initiative of researchers from the University of North Carolina, sees University of Parma as the main scientific partner, while MUSE’s education department is the referent for the didactic aspects, such as the creation of the “Ants Box”, a small case including all the material necessary for a class to be part of the project. The project aims to reach schools all around Italy.

Responsible research and innovation seeks to eliminate the gap between those who produce, enjoy the products of, and regulate scientific research. NANO2ALL is an example of a RRI action MUSE has promoted. It is part of an EU project (NANO2ALL – Societal engagement on responsible nano-technology, 2015-18) financed by Horizon 2020 and involving eleven countries. Panels have been created in Trento’s MUSE made up of scientists, private firm managers, NGOs, journalists and citizens, to discuss all the implications of nanotechnologies. From the point of view of citizens, NANO2ALL has not just been an occasion to learn the technicalities of a specific research branch, but more generally a way to increase their trust in the scientific method and in scientists and to reveal that scientists are also interested in the ethical implications of their discoveries. RRI is also

¹⁵ The site is part of the UNESCO serial site “Pre-historic Pile Dwellings around the Alps”.

important for scientists, making them aware of the importance of bidirectional dialogue with society.

MUSE seems to be fully aware of the importance of documenting and responding to feedback from its audience. These are not just used as an ex post validation of their action. Surveys are often proposed to potential visitors about their expectations, needs and feelings. They have been particularly important at the time when the new MUSE building was conceived and built. Temporary exhibitions benefit from a preview from a random sample of visitors whose feedback is taken into account to possibly modify some features of the project. Surveys are also proposed to the participants of the various activities the museum organises.¹⁶

Not all feedback is positive and actions are possible to address those less favourable comments. For example, around 4.6% of Tripadvisor reviewers judge the offer as poor.¹⁷ Admittedly, MUSE's collection in itself is not unique; however the museum tries to overcome this shortcoming by offering a convincing narrative combining its pieces. This narrative walks the fine line between education and entertainment. The vast majority of visitors appreciate the proposed narrative. Those complaining would prefer more a systematic, so to say "classic" approach. Perhaps at times there is also a problem with the quality of guided visits. The staff of MUSE's educational services are mainly employees, yet some tasks are outsourced, such as the "Ask me" services in the area where visitors can experiment with mechanics by using physics "toys". The externalisation of some educational services appears as a potentially problematic issue. Particularly in a science museum, competence is a fundamental element to induce a sense of trust in the institution, hence in science. Sometimes training of external staff may not be enough, as their only temporary association with the museum may mean a weaker motivation and identification with the institution.

Finally, is MUSE an innovator in cultural dissemination? The first Bioblitz took place in Washington in 1996. The first Discovery Room was opened in 1974 at the Smithsonian National Museum of Natural History (Washington), followed by many others around the world. MUSE's management seems to be aware of the best practices around the world, and has a desire to import them to Italy (often as first timers) and to adapt them in the local context. Some initiatives, however, do appear as truly innovative, such as the Maxi Oh project. MUSE also takes part, in collaboration with other local institutions committed to cultural dissemination, in a project financed by the provincial government focused on innovation in methodologies for informal education.

In accomplishing its cultural development mission at the local level, MUSE greatly benefits from a favourable institutional framework set up by three different provincial government departments. The culture department is responsible for the decision to gather all natural and archaeological museums of the province under a unified and autonomous administrative unit, at the head of which stands MUSE. This allows a high degree of co-ordination of all educational activities and related marketing strategies, as well as economies of scale due to

¹⁶ In addition to feedback collected through surveys, online reviews are also important as they also play a crucial role as a marketing tool. MUSE's policy is not to reply to Tripadvisor reviews. However, it seems to take them into account, such as comments suggesting more attention to pet owners' needs.

¹⁷ However, the most cited element allegedly causing dissatisfaction is, by far, the queue at the entrance.

the sharing of a number of back office tasks. The department of land, agriculture, forests and environment has devised a managing model for natural reserves consisting of a network involving local communities, thus applying rather successfully the European policy framework Natura 2000.¹⁸ The role MUSE has been called to play within this network is quite important, both in terms of research (especially monitoring activities) and in terms of awareness raising and knowledge at the very local level (valleys and municipalities). Finally, for the past 20 years, the Province of Trento has been granted autonomy in the management of the local education system. This is also a good premise for the creation of a network between the main education institutions and the world of public museums, themselves also dependent on local governments. This premise has been fruitfully exploited by MUSE to establish stable and positive relationships with schools (education of students and teacher training).

The provincial government is also characterised by a strong commitment to policies favouring families with children. It has set up a family and youth policy agency which is especially active in inducing local organisations of all kinds (from public institutions to private companies, especially in the tourism sector) to adopt family-friendly policies. This agency has created a label, “Family in Trentino”, with its own logo and visibility. This label is granted to any organisation wishing to have it, provided it fulfils given standards of quality for their services dedicated to families. MUSE is among the public institutions having been granted this label. In addition to this, in November 2017 the provincial government, MUSE and UNICEF signed a protocol by which MUSE will become part of an experimental project named “Museums and libraries friends of children and adolescents”.

Facilitation in networking processes and the creation of a framework of policies favouring families are the main contributions the local government offers to MUSE’s dissemination strategy. Given MUSE’s current autonomous status, the provincial government is not entitled to help MUSE in this respect with more in-depth actions. For instance, it is MUSE’s sole responsibility to find the best way to make a visit a meaningful experience, and to decide its opening times.

Financially, the provincial government grants MUSE an annual allowance (rather stable throughout the years) for its institutional tasks, including research and education. However, MUSE often also asks for extra money for specific projects: research and education activities additional to the standard services it produces. The provincial government often grants extra subsidies, especially if these projects also receive funding from the EU. EU funding is interpreted as a signal of the project’s quality.

Underlying MUSE’s activities fostering cultural development, it appears there is a shared view between the local government and the museum. However, some fears emerge within the museum as to the possible consequences of the implementation of the reform embodied in provincial law no. 15, 2017. Reducing a museum’s autonomy may affect its effectiveness in dissemination.

¹⁸ The three mountain parks of the province (Stelvio, Adamello-Brenta and Paneveggio-Pale di San Martino), which have their own administrative status, and UNESCO Biosphere Reserve “Alpi Ledrensi and Judicaria”, are part of the network.

4. Promote museums as spaces of inclusion, health and well-being

Traditionally, local governments do not consider museums as direct actors in social development beyond their educational role. However, museums increasingly contribute to individual and collective well-being. Their potential contributions to health, for example, are particularly important in the context of ageing populations. Other initiatives relating to school drop-outs or the rehabilitation of ex-offenders and the improvement of self-confidence are also significant, but are sometimes neglected since their effects are difficult to evaluate and are only evident in the long term.

Local governments could consider museums as resources for building social capital, promoting social welfare and supporting the links with social institutions that intervene at the local level. In turn, museums need to build their internal capacities to be more proactive in this field. Potential outcomes relate to:

- Changing people's perception about their needs and problems and making them more proactive in improving their own lives.
- Raising people's well-being with special consideration for marginalised groups.
- Giving people more self-confidence, upgrading their capacities and improving employability skills.
- Improving social cohesion.

As MUSE is a science museum, its educational activities (see Section 3) are often centred on topics such as sustainability and/or health. Science also reveals that the features all humans have in common are by far more numerous than those that make us different, and by communicating this, MUSE's exhibitions also contribute to fighting racial prejudice and to promoting integration. An indirect commitment to the local community's health is also the communication MUSE has established with the agricultural sector in order to make its practices less reliant on chemicals and more oriented towards a sustainable development model (see Section 1).

MUSE is not involved in actions having a therapeutic effect on its visitors. Its Maxi Ooh section, however, is (also) conceived as a space that contributes to early age prevention of mental health problems.

Maxi Ooh is an innovative project in many respects. It is a space within the museum dedicated to children aged 0 to 5 years. The target visitor is a "babult", i.e. a couple consisting of a baby and an accompanying adult. There are two large rooms: one is a welcoming space, where special care is dedicated to helping visitors relax, while the second one is dedicated to sensorial paths (hearing, touch and sight). In fact, Maxi Ooh is focused on perception, the use of the senses and their coordination. There are spheres (pumpkins) devoted each to a particular sense where children learn and experiment with body, mind and emotions (responsive large screens, heated floors, etc.). It is a space without directions, where adults, both the parent and the tutor, do not teach, but participate in the wonder, discovery and knowledge processes, and where peer learning and exchange are most important.

The story of Maxi Ooh is interesting because it illustrates MUSE's attention to the needs of its most important stakeholders, its visitors, as well as its networking skills. Before the new Science Museum was re-opened in 2013, a survey was conducted with 2 500 local potential visitors on the desirable features of a new museum. One of the most important needs they expressed was a specific area dedicated to families with very young children, and activities for the latter.¹⁹ The original new science museum plan was therefore modified to include a much larger space for this type of audience. In the meantime, advice was solicited from experts on how to conceive this space and the activities that would take place in it. The local networks of day care centres and kindergartens were involved, as well as Reggio Children, a private-public entity committed to the diffusion of the world-famous Reggio Emilia pedagogic model for very young children. Reggio Emilia's day care model focuses on self-directed experiential learning in relationship-driven environments, and has had international resonance since the end of the 1990s. Organisation of spaces plays a special role in it, as well as co-creation of knowledge and experience by children. In addition to seeking advice in the world of early education specialists, MUSE also considered the opinion of a number of other experts in the fields of health and social sciences. Its staff organised twenty meetings with anthropologists, researchers in the field of autism, neurologists and experts in disability to validate the proposed project.²⁰

MUSE's commitment in the social inclusion dimension is focused on disability and young people neither in employment, education or training (NEETs). As far as disability is concerned, MUSE's management works to make these two statements true:

- Disabled people should be able to visit the museum on their own, if they wish to do so.
- A museum is a place where able and disabled people should meet.

Both goals entail that some disabled people are involved actively in museum life. MUSE works on a number of projects in collaboration with local social cooperatives. These are financially supported by the provincial government, through subsidies to the cooperatives.²¹

The social cooperatives working for and employing blind and deaf people have collaborated with MUSE to prepare and organise guided visits, available upon request, especially conceived for those with these types of disabilities. The guide is a disabled person, part of the social cooperative, who has been trained by MUSE's staff.

¹⁹ In an open question about the most desired features for the new museum, 27% expressed this demand.

²⁰ It is surprising to notice that Maxi Ooh is not often cited in the reviews on MUSE; even more surprising considering that the majority of the reviewers visited the museum with their family. Possibly there is a self-selection phenomenon here: not knowing of the existence of Maxi Ooh, only families with older children are likely to visit. This calls for a marketing strategy targeted to families with younger children. The few reviews mentioning Maxi Ooh generally talk about it in positive terms.

²¹ In-kind contributions are offered by the co-operatives who receive funding by the government, therefore they co-create value within the museum and do not serve as a pass-through of financial resources. For instance, the disabled guides do not appear in MUSE's budget as their employees, because they are paid by the partner non-profit institution, but they actually work for MUSE. Another example is the following: some custodians are jobless people paid by the Autonomous Province of Trento within a long-term project to reduce unemployment.

Since September 2017, every Monday (the day the museum is closed) MUSE receives the visit of a group of mentally disabled persons. Their job is to map the museum spaces and evaluate how friendly they are to the disabled. They also consider the way the collection is displayed. They will be involved in the creation of a printed simplified guide.

In all these initiatives, there are two goals: to make the museum visitor-friendly also for people with special needs, and to empower disabled people by making them feel part of the museum organisation. The latter also has positive consequences on their self-confidence and benefits them in terms of skills acquisition.

An even more challenging project is the one in which mentally disabled people and people with serious physical disabilities are involved as “accompanying guides” for groups of the non-disabled. On Sundays upon request, a visit is proposed in which one can discover MUSE following two guides: one is part of MUSE’s staff and the other is a disabled person, who is doing this as part of her job training programme.²² Here part of the project is directed to standard visitors: the purpose is to make their perception of disability more coherent with the very reality of special needs. Self-selection is a challenge, as ideally, one would like this type of visit *not* to be chosen by visitors who already have an open mind with respect to disability. On the other hand, imposing this type of guided visit on randomly selected visitors might be a danger, because some of them could express their prejudice openly, thus harming the disabled guide’s self-confidence. In any case, the very fact that MUSE promotes this initiative, and advertises it, is in itself a strategy for social inclusion reaching a vast and diverse audience.

MUSE’s gardens are the focus of a social inclusion project involving young people whom the provincial government (through its social department) has identified as “critical”. These people, usually young people neither in employment, education or training (NEETs), are supported by a large social cooperative called Progetto 92. In 2013, MUSE involved this cooperative in the management of MUSE’s greenhouses (see Section 2). Progetto 92 had been running its own greenhouse previously, therefore they had specific skills in this field. Now at-risk adolescents work in MUSE’s gardens, under the supervision of a botanist and an educator. Costs are shared: botanists and educators are part of the cooperative, while heating, fertilisers etc. are MUSE’s responsibility. The collaboration has been extended to also include other activities. Progetto 92 runs a carpentry workshop, which now produces bird houses on sale at MUSE’s shop.

The collaboration between the social cooperative Progetto 92 and MUSE is taking a step ahead. The partners are jointly running a shop in Trento downtown, a branch of MUSE’s museum shop on the site of the old natural science museum. This is also seen as a way to increase MUSE’s visibility. NEETs will be involved both as producers of gadgets and as shop assistants. The cooperative also manages projects involving youth who have been separated from their problematic families. They are gathered in small groups in apartments under the supervision of an educator. During the summer, these adolescents are invited to take up a job, and Progetto 92 intends to involve them in the MUSE’s shop project as well.

Museums can also contribute to the health and well-being of their communities by providing activities targeted at vulnerable groups, including those who are or who have been in prison. Prisons are run by the central government in Italy. A contractual agreement is in place between the Home Office and the Ministry of Culture, with the collaboration of

²² The disabled guides are paid by the social cooperatives.

regions, to favour artistic activities in prisons. The performing arts have been introduced extensively. The museum sector has not been so active in this respect, though some interesting examples of involvement of museums with prisoners do exist.²³ MUSE has no ongoing programmes in this area, although there is some potential here considering that both MUSE and Trento's prison have a vegetable garden, an idea under consideration.²⁴ The garden is also seen as an opportunity for projects involving the ethnic communities living in Trento. Integration projects focused on marginalised youth are in a programming phase with a local NGO, and this activity could be viewed as a tool to reduce future criminality.

In all strategies MUSE adopts in the domain of social inclusion, the museum management seems to be very active in proposing but could perhaps do more in terms of ex-post evaluation of results. Since these are not typical museum activities, it is difficult for a museum to monitor these effects, and evaluation should be delegated to third parties, which has not yet been tried. Two other critical aspects are the lack of a *systematic* approach to the share of project costs and under-developed collaboration/coordination with other museum institutions on social inclusion.

If we define well-being as a term also comprising health and social inclusion, MUSE's active role in the promotion of well-being mainly stems from its management initiatives. This is possibly due to a legal context in which the museum benefits from autonomy in its strategic choices. The local government's role is therefore to choose to finance museum special projects and actions by partnering social cooperatives. For example, money is often granted to MUSE in addition to its budget for special dissemination projects, some of which concern health issues. Social policy actions are often outsourced to non-profit entities working for and with the disabled and disadvantaged, and MUSE actively collaborates with some of them. These social cooperatives mainly rely on public money. Yet all rests on politicians' sensitivity to the issue and depends on ad-hoc project funding, and on a museum's will to be active in the field. Within the current legal framework, museums are not encouraged to start initiatives in this respect. In fact, other local museums are not so active. It would be highly desirable that the contribution of museums to well-being be recognised by departments/agencies above and beyond the culture department. The new law reforming the cultural sector (law n.15, 2017) seems to be the first legal document recognising the role of cultural institutions for the well-being: it states that cultural institutions should contribute to improving quality of life and favour processes of social inclusion (with special reference to migrants). At the same time, the laws specifically focused on local development do refer to well-being, but museums are not mentioned there. In the local legislation on public health services there is no mention of the role museums can play.²⁵ Finally, the provincial government is committed to connecting educational organisations and the labour market, but the new law regarding these issues has not yet been implemented, and at the moment there is not a strong involvement of the culture department in this strategy.

²³ In Trento, for instance, the local Diocesan Museum has organised dedicated activities.

²⁴ In Trento's prison, a cooperative active in inclusion projects has involved about 20 prisoners (out of 250) in the cultivation of saffron, medical plants and cabbages which are sold on the local market.

²⁵ The health sector is a regional competence in Italy (a provincial one in the local context), and being Trentino a province enjoying an autonomous status, also social policies are carried out mainly following the prescriptions of local (provincial) legislation.

5. Mainstream the role of museums in local development

Beyond the specific areas where local governments and museums can partner to maximise the impact of museums on local development, the overall governance of the museum-local government partnership can impede or facilitate this impact. The structure of the partnership will change according to both the size of the local government and the legal framework connecting museums and local governments. Regardless of these specifics, however, the following principles generally underlie such a partnership:

- Museums can contribute to local development as both drivers and enablers. As knowledge hubs, they can design and deliver new services that create more inclusive and sustainable development.
- Local governments can mainstream the role of culture as a lever of local development and mobilise resources — regulatory, financial, land and human — that enable museums to realise their local development potential.

Mainstreaming museums in local development requires the recognition of the potential for creative development and social transformation of museums by all the stakeholders in local development. New museum management frameworks, which account for local development issues and perspectives, are also needed.

While all dimensions so far have covered the joint actions of Trentino local governments and MUSE focused on reaching local development goals, this last dimension deals with the coherence between those goals and the means to reach them. Among these means there are both instruments and routines used in the day-to-day museum life, such as strategies focused networking and on cost-sharing with other institutions, and aspects more related to the long-term dimension, such as its conservation policy and its multi-year programming. In fact, a serious commitment to fostering local development needs both a practical approach to day-to-day organisational and financial issues and a sustainable and coherent policy in the long run. In particular, the long-term vision is of paramount importance, given the fact that some of the actions a museum may take to foster development manifest their effects only after many years (such as in terms of education).

MUSE's challenges with respect to this dimension are twofold:

- From the point of view of the management of the museum's day-to-day operations, a revision of staff policy.
- From the point of view of long-term programming, a new budgeting method.

The necessity of a new staff policy comes from a status quo in which too many people working in the museum, in particular all the so-called pilots (guides to the use of the hands-on exhibits), are now just collaborators, not employees. This comes from the recent history of the museum. When the new Science Museum opened in 2013, the expectation was of a big boom of visitors in the first year and possibly a downturn afterwards. Staff size was adjusted to these expectations, i.e. staff was increased, but not greatly and there was a large use of contracts for temporary jobs. Yet the downturn never took place. Having de facto

permanent staff employed as temporary workers is negative for a museum, as it prevents their identification with the institution and triggers principle-agent type problems. It also splits staff, preventing a cohesive atmosphere to grow. On the other hand, the higher costs of permanent employees are unaffordable given the current and perspective budgets. A solution has recently been found: the collaborators will form a co-operative to which MUSE will outsource the tasks now covered by the collaborators. While this type of arrangement is indeed an improvement with respect to the previous situation, it is not ideal for a museum to outsource (part of) its educational services, considering that education is a fundamental mission. Outsourcing is common in Italian museums, but other institutions have chosen a different strategy: only back office tasks and low-skills profiles have been contracted out.

As far as the long-run vision is concerned, since 2016 MUSE produces an accounting document, called its Three-Year-Plan Document, which clarifies its priorities and constraints in financial terms over the following three years.²⁶ Clearly, three years is more a medium-term horizon than a long-term one, but it is nevertheless longer than a one-year perspective, which is what has been the rule in Italian public museums until recently. Now the context has changed. In fact, a national law (Law 118/2011) has prescribed that a three-year budget must be produced by all levels of government and their agencies. MUSE abides by the law, but it goes beyond. The multi-year financial plan it produces is made particularly readable through the presentation of a reclassification of all revenues and costs according to the activity based costing method. This is a particularly difficult task for a museum whose policy is often to fulfil multiple goals with any activity, and it is a challenge very few governmental agencies (including museums) have faced so far.

One opportunity is a reclassification that could follow the principle to assign all costs and revenues to the five dimensions where museums can typically contribute to local development: economic, urban regeneration, education, health and well-being, management. This would make the Document an effective, practical support to the long-term effort of the museum to maximise its impact across different dimensions. The reclassification it contains is more functional to the financial negotiations between the museum and the provincial government than to the museum's operations. The Document is presented every December to the council board of MUSE and to the provincial government for approval.²⁷

Alongside the current reclassification, MUSE management and its accounting unit are now considering a three-year plan that re-allocates all costs and revenues to the five dimensions of local development. This could be a way to avoid the risk of a budget allocation that is unbalanced in favour of revenue-generating activities, as revenue-generating activities are not necessarily those having the highest impact. Improving the museum shop may be of second-order importance with respect to starting a new programme for social inclusion. This revised approach considering different dimensions of local development and using the

²⁶ This Plan complements the more descriptive Multi-year and Yearly Activities' Programme.

²⁷ There is a clear attempt to classify all costs and revenues so as to highlight that many activities (from fundraising to didactic activities) pay themselves, and part of the revenues even cover conservation and other non-reducible costs. In other terms, the provincial government grants are not sufficient to cover the costs associated with the basic activities of a museum. Presenting accounting data so as to highlight this evidence clearly points both to how successful MUSE is in generating own revenues and to the fact that the provincial government funds don't cover all basic costs.

activity based costing method facilitates a review based on impact size, and therefore allocating the budget between the different dimensions and, within each of them, to the different programmes in coherence with the impacts prioritised.

In fostering a culture of medium-term planning, the implementation of Law 118/2011 has assigned a new role to the provincial government, too, because now it must declare its grants for every cultural institution in the following three years. Though not a full commitment (adjustments are possible from year to year), this is a great improvement with respect to the recent past, in which every museum could only know about its governmental grants for the next year. The recent provincial law reforming the governance of cultural institutions (law no.15, 2017) often makes reference to long-term goals, such as social inclusion and increasing creativity and innovation at the local level, however the re-assignment of all museums' employees to the provincial government, which may endanger the autonomy of museums, is not necessarily contributing to this goal.

The dimension of museums' and local governments' commitment to local development also includes a number of specific topics summarised in the following section.

Short term

Efficiency: the revenue side

The yearly provincial government contribution amounts to about 55% of its budget. The museum can retain its revenues coming from its visitors, including ticketing, educational services, profits from the shop and parking lot, concession fees of the museum café. MUSE covers the rest of its expenses through research grants and contracts (the latter mainly signed with the provincial government for long-term projects focused on monitoring the environment).

Efficiency: minimisation of costs

All projects are discussed and devised so as to minimise costs (no duplications) and to possibly get two birds with one stone, so that typically projects are favoured in which different departments are involved (marketing and education; research and education; conservation and relations with other institutions), many of which have been exemplified in Sections 1, 2, 3 and 4.

Cost sharing is not so common with other museums, more so with other institutions. It does not derive directly from a provision of the provincial government: MUSE has its own autonomous status. Yet, many activities focused on social inclusion and employability are supported by the provincial government through grants given to the social co-operatives to which it outsources its activities, and who contribute to MUSE's offer through in-kind contributions. This arrangement may be viewed as a form of resource pooling.

Fund-raising and sponsorships may also be interpreted as forms of cost sharing. By convincing companies to sponsor its activities MUSE shares its costs: co-marketing campaigns (such as those with Ricola and Dolomiti Energia) are an interesting example. MUSE has staff dedicated to membership cards and the relationship with companies; there is a range of offers for would-be partners, both individuals and companies, as well as personalised arrangements for the latter. As MUSE operates in an area with very few big players in the private sector, its commitment in this respect must be great to be successful, and go beyond the geographical boundaries of the Autonomous Province of Trento.

Communication of the local development goal

MUSE assigns to a yearly corporate social responsibility report the task to communicate its commitment to local development to the different stakeholders. This report has a special focus on the achievements of the last year. In order to play at best its role, it could be complemented with more information on future plans, so as to be more co-ordinated with the Plan Document.

Share of spill-over gains

The need to calculate the spill-over gains from museum activities is well perceived, although it is also recognised that it is generally difficult to do it accurately, given that the positive externalities are widespread and sometimes take time to appear (such as for education). However, one of such arrangements is actually already in force between the museums and the local tourist boards through the supervision of a provincial agency, Trentino Marketing (see Annex 2).

Volunteers

Trentino is one of the Italian areas in which social capital is at the highest levels, as measured by the per capita number of blood donors. Volunteering has a century-old history: the voluntary fire brigades are present in every town and village and especially in the latter they involve a large percentage of adults. The provincial government is very committed to keeping this virtuous record, especially through generous in-kind grants to voluntary organisations. Although there is no strong tradition of a commitment of volunteers in heritage preservation and culture in general, in MUSE's new statute (a provincial regulation dating 2011) "support of volunteers' participation" is mentioned among the missions of the museum.

Volunteers in museums are often a problem in Italy also because of the power of trade unions, who often oppose their involvement. Recently, however, a national law, adopted also at the local level, has added a compulsory number of working hours to the curriculum of all students aged 17-19. This work is not paid and it is possible to choose among different types of jobs; every school establishes relationships with different companies and organisations and offers a variety of them. In Trentino, the project, called *Alternanza Scuola-Lavoro* has allowed the establishment of new relationships between schools and public museums, which was eased by the fact that both education and all major museums are within the sphere of competence of the provincial government. MUSE has set up relations with several local high schools to have students in their *Alternanza time* working in the museum: these students were 158 in 2017. Some also see young people doing their civil service as a type of volunteering, albeit they receive a small payment.

Civil service in Italy is a voluntary activity under the competence of the regions and autonomous provinces: in 2013 Trentino was the first local government to dedicate to it a specific law. Civil service is seen as a means to promote active citizenship, to favour social inclusion and also on-the-job education. Some civil service projects involve the participants in cultural activities. MUSE is an accredited organisation for hosting civil service projects, and 24 youth aged 18-24 spent 3 to 12 months working there in 2017.

Occasional use of volunteer work in the organisation of events is not uncommon at MUSE: 135 people were involved in 2017, though just for some days or hours.

Finally, MUSE's citizen science initiatives may also be interpreted as a way to involve volunteers in scientific projects.

Long term

Maintaining preservation, conservation and research as core tasks

MUSE obviously has a dedicated plan; the staff working in conservation and archiving update their skills through courses that they take on a regular basis.

The provincial government has organised spaces for the conservation of pieces coming from different local museums. Clearly, museums of different nature may have different conservation needs, and so museums also have their own conservation spaces.

Recognition of the local development goal

It is MUSE's statute itself (in legal terms, a provincial regulation) that states that the museum "participates to the development and promotion of the territory". Similar statements are also in Law no.15, 2017, yet laws and documents not strictly pertaining to the cultural sector do not see museums as principal actors.

Institutional design

MUSE's Three-Year Plan Document includes many quantitative indicators referred to the last year: from number of publications associated to each multi-year research project to the number of school classes involved in didactic activities. The Document must be approved by the council board and the provincial government every year; the approval may then be considered as an implicit recognition that if these standards are kept in the future, the grants it receives are justified.

The autonomy MUSE enjoys is a positive element in terms of institutional design, because it allows the institution to be more effective. In this framework, the director is, de jure and de facto, responsible for both (the details of) the vision and its implementation. In perspective, an enhancement of every museum unit's vision and management capacity could strengthen the implementation of the overall vision and strategy.

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Annex 1: List of interviews conducted as part of the case study

Interviews with qualified representatives of the museum and of the local government were conducted using a predefined grid of questions. The answers have then been translated from qualitative information into a quantitative scale. A validation through unstructured interviews to local stakeholders was part of the exercise. The structured interviews were conducted with Michele Lanzinger, Director of MUSE, and with Claudio Martinelli, Head of the Culture Department of the Autonomous Province of Trento. The unstructured interviews were conducted with:

1. MUSE Science Museum staff:
 - Mr. David Tombolato and Marco Fellin, FabLab
 - Ms. Samuela Caliarì, Education Unit
 - Ms. Alberta Giovannini, Non-cultural Services Unit (including corporate membership)
 - Mr. Paolo Pedrini, Research Unit
2. Interviews with local stakeholders:
 - Mr. Emanuele Eccel, Fondazione Mach (partner in research and research communication projects)
 - Mr. Marco Dalla Torre, president of the social cooperative Progetto 92 (social inclusion projects)
 - Ms. Chiara Zecchetto, Dolomiti Energia (corporate membership partner)
 - Prof. Alessandro Rossi, University of Trento (collaboration on innovation projects)
 - Mr. Andrea Navarini, manager of a local firm involved in a project carried out by MUSE's FabLab
3. Local stakeholders not suggested by the museum:
 - A manager of a local small company in the ITC sector
 - A teacher of a secondary school in Trento
4. Other representatives of government entities:
 - Mr. Paolo Nascivera and Mr. Paolo Maccagnan, Trentino Marketing
 - Ms. Milena Bigatto and Mr. Andrea Guarise, HIT (Trentino Innovation Hub)

Annex 2: Good practice for local governments: Trentino Guest Card

Trentino as a tourism destination

Trentino is an Alpine region in the north of Italy. Its main tourist destinations are in the Dolomites, a UNESCO-listed mountain chain with a unique landscape and cultural background, and (part of) lake Garda. Recently, the province's largest municipality of Trento has gained tourist fame for several attractions. This includes the opening of the new MUSE, the organisation of festivals (Festival of Economics, Trento Film Festival) and a Christmas market. The area has two main tourist seasons: winter, when Trentino is mainly a ski destination, and summer, a season in which hikers and bikers mix with tourists with a wider range of motivations for visiting. Excluding the owners of second homes, in 2017 there were almost 4.3 million arrivals and over 17 million nights spent in Trentino, of which fewer than 10% were in Trento town. The vast majority of tourists visiting Trentino in the summer are Italian and are not on an organised tour. During the ski season the arrivals from Italy still dominate, but given that the foreigners stay longer, the share of overnight stays is roughly half Italian and half foreign visitors (Servizio statistico PAT, 2017).

Trentino Guest Card

In the summer of 2013, Trentino Marketing asked the local tourist boards (APTs), public-private organisations operating in municipalities, to join a project called Trentino Guest Card (TGC). Only a few joined, but the number increased in summer 2014, and by 2017 all but three out of 20 APTs had joined. The project has been ongoing since, and extended from the summer season to the whole year.

The idea is to offer all tourists in Trentino a card allowing them free or discounted access to a large number of services all around the region. The main free services are public transport, museums and natural parks access, whereas discounted services mainly involve private producers of local agricultural products (especially fruits, wine, cheese and honey). The average number of services TGC offers is 200.²⁸ TGC is a group/family card and it is generated and offered to tourists by hotel staff at their arrival. Hotels and accommodation facilities must offer the card and many actually promote it, as a complement to hotel services. In 2017, about 226 000 TGC were issued (for a total of 550 000 tourists), and they recorded about 260 000 admissions/purchases of services.

The card allows the construction of a database, as a Qcode tracks all users' purchases, except for public transport and a small number of discounted services at shops. The card also records some characteristics of the holder (number of tourists in the party, number of children, foreign/Italian, if Italian: region of residence) and of the hotel issuing it. The card therefore is not just a marketing tool, but an essential source of information for profiling as well as future marketing strategies and tourism infrastructure planning.

The Trentino Guest Card is self-sustaining, in the sense that the contributions by the APTs fully cover the costs to the providers. Public spending is only used for Trentino Marketing

²⁸ Since in some of Trentino tourist areas the local APTs had already introduced a local destination card before 2013, in these areas TGC merged with the local card. This means that in the different areas of Trentino, the TGC offers a different range of services: in particular, in some areas lifts and chairlifts are included in the summer, whereas in others they are not.

personnel associated with the general administration of the project and of the payment of the outsourced IT system supporting it.²⁹ Up to now, thanks to an increase in the use of the services offered in the card after it was introduced, all service providers have agreed to confirm annually their partnership with TGC.

Public transport providers, museums and parks are paid the admissions/tickets associated with the use of the card through contributions by the APTs. These APTs in turn receive from their affiliates a share of the tourist tax they collect.³⁰ The whole of these contributions is divided into different budgets, and the budget dedicated to cultural institutions is by far the largest. This budget is roughly calculated as the expected TGC museum admissions multiplied by 0.7. Until 2018, this amount was divided among the different museums/castles in proportion to the number of TGC admissions they recorded, but with a ceiling: no museum could receive more than 20% of the cultural institutions budget. This clause had been introduced at the beginning of the TGC project as a way to attract small museums. In addition, only a small discount for TGC admissions for smaller museums is provided (30%). This ceiling may also have taken into account the fact that in larger museums, TGC visitors would also contribute to other revenues, due to the presence of other services, such as guided visits, food and drink services or a gift shop.

Trentino Guest Card and MUSE

The TGC was introduced around the same time that the new MUSE was launched. MUSE's admissions immediately boomed. As MUSE's notoriety increased, it perceived the 20% ceiling on the overall TGC budget as a constraint. MUSE continually reached the ceiling, and this implied that at the end of the day, the revenues from TGC admissions were resulting in net receipt of only around 60% of the ticket price for every TGC admission.

Considering that the TGC project crowded out a non-negligible number of regular admissions at MUSE, the museum management needed to change the arrangement. According to a new proposal, TGC would not offer a free admission in August, but would only guarantee a 20% discount in this peak month. While Trentino Marketing did not favour this proposal and considered it was against the spirit of the project, and a compromise was found. Starting in 2018, the new arrangement requires that all TGC holders who wish to visit MUSE have a free admission. However, there are now two budgets for cultural institutions: one for small museums and one for large ones. The allocation of the budget for the large museums is strictly proportional to the number of admissions: each receives the number of admissions times 70% the price of a full ticket. This arrangement protects smaller institutions, while at the same time increases the competition among more well-known museums.

The renegotiation was also the occasion for the start of a new service offered by TGC through its new App: a service called "Skip the queue at MUSE". The service is financed through a dedicated budget, calculated as 70% of the service price (1 euro) times a given maximum number of services that can be sold through the App (negotiated with the

²⁹ Trentino Marketing itself is partially funded by contributions from the APTs.

³⁰ Sometimes in the areas where a tourist card pre-existed, and where the TGC therefore offers more services, it is given to tourists at a price. In this case, those revenues substitute/complement a higher tourist tax.

museum). The App is a tool Trentino Marketing uses to collect email addresses,³¹ a database they use to promote events through a mailing list service.

The story highlights the active role of MUSE in working with the tourism authorities. In the beginning, the card's success started driving new visits to Trentino and its cultural institutions. Then MUSE's growing recognition become one of the important motivations for tourists to visit Trentino and this gave MUSE a convincing argument.

This example also highlights particular challenges with destination cards schemes among types of museums as well as with tourism boards. Typically the potential conflicting incentives are between tourism boards and cultural institutions for determining the share of revenues to cultural institutions. In addition, there can be conflicts as well among museums themselves when determining is the split among them. There is a clear distinction between small cultural institutions, for which participating in the destination card is crucial in terms of visibility, and larger ones, whose benefits from the card are not so great but the presence of which is crucial for the very success of the destination card. Various contract arrangements are likely needed for the different types of service providers to guarantee the participation of all types.

³¹ About 20 000 email addresses have been collected so far (March 2018).



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