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Impact analysis on adaptive reuse of obsolete ecclesiastical cultural heritage

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Today, many churches all around the world are in various states of disrepair, which would be an irreparable loss. This research paper examines the new, mixed or extended adaptive use of underutilised and abandoned ecclesiastical cultural heritage with specific reference to human-centred impact analysis and the creation of added value. Sixty-five (65) international case studies are analysed to explore creative holistic solutions to re-integrating underutilised and disused religious assets back into contemporary urban and rural landscapes. The case study analysis encompasses: ecclesiastical stakeholder valorisation; forms of obsolescence; dimensions of adaptability; interpretation of complex value relationships and human-centred impact analysis. The case study findings indicate that sensitive adaptive reuse of obsolete religious structures to Post Religious Uses has the potential to encourage positive inflows of investment capital with corresponding positive impacts on the economic values attached to new and extended uses in addition to spiritual, cultural, social, environmental and economic values for society. The research proves that churches which are brought back into the contemporary urban fabric of communities has the potential to yield benefits that contribute to sustainable development and contribute to cultural capital.

KEYWORDS

adaptive reuse, ecclesiastical cultural heritage, value creation, impact analysis, sustainable development

Introduction

Ecclesiastical heritage forms a distinctive visual keystone to urban and rural landscapes in addition to encompassing complex multi-faceted spiritual, cultural, aesthetic, social, environmental and economic values. Falling numbers of active religious worshipers have resulted in large numbers of heritage assets falling out of their original spiritual use and thus falling prey to negative value judgements by society.

This paper relates to immovable ecclesiastical historic structures and ensembles encompassing both tangible and intangible cultural heritage values, which cannot be replaced once the structures are destroyed—including destruction by neglect. Sixty-five international ecclesiastical case studies are examined to explore creative holistic solutions to re-integrating underutilised and disused religious assets back into contemporary urban and rural landscapes, when adaptive reuse is considered an essential strategy for the

FIGURE 1
Key words of the study. Source: Own.

sustainability of cultural heritage, and furthermore for preserving the image of the city (Dogan, 2019). Case study analysis encompasses: ecclesiastical valorisation; forms of obsolescence (pre-adaptation); dimensions of adaptability; impact analysis and interpretation of complex value relationships.

This analysis and dialogue on possible new forms of use for religious heritage is mindful of the necessity to respect and protect diverse cultural beliefs and the collective memories of past, present and future communities—worshipers and non-worshipers alike (Sedova, 2020). In this regard, it is important to acknowledge that creative adaptive reuse solutions for ecclesiastical heritage assets are not always directly transferable between regions and cultures due to differing traditional spiritual beliefs and value systems (Pickerill et al., 2009).

Literature review

Underutilised and abandoned religious heritage assets provide an unprecedented opportunity for local communities to benefit from "human-centred" (EU, 2020) strategic development approaches. According to the European Commission, a "human-centred" city is a city "that is well-assembled, where there is history, character, distinctiveness, diversity and vitality, with high levels of liveability and all the necessary support facilities, from health and education to culture and public spaces. All of these generate a rich civic life" (EU, 2020, p. 16). Thus, "human-centred" impact analysis is the one which is based on the recognition of history, character, distinctiveness, diversity and vitality. The history is the first aspect which is used to describe the "human-centred" city concept. The Leeuwarden Declaration makes specific reference to religious sites' history (including religious sites located in cities but not limited to) and explores the multiple benefits of finding "new, mixed or extended use" for underutilised and abandoned heritage sites that have lost their traditional function in society (ACE, 2018).

In general terms, "Adaptation" can be defined as any work done to a building, over and above maintenance, to change its spaces, tasks, capacity, function, or performance, in other words, any interventions to adjust, reuse, or upgrade a building to suit new conditions or requirements (Douglas, 2006; Wilkinson et al., 2014). In the context of this research, Foster (2020) provides a definition of cultural heritage adaptive reuse projects as the retrofit, rehabilitation and redevelopment of one or more buildings that reflects the changing needs of communities. Tying in with the circular economy approach, adaptive reuse provides a strategy aimed at preserving cultural, social, economic and environmental values, while at the same time adapting obsolete built heritage for new, extended and shared uses.

This initial theoretical perspective lays the groundwork for the practical case study analysis to highlight potential new, mixed or extended uses of ecclesiastical cultural heritage through adaptive reuse and further clarify possible relationships between the above components within a sustainable circular

economy development strategy (see Figure 1). The Author argues that the study of such topics as "human capital," "adaptive reuse," "value creation," "sustainable development," "historic urban landscapes (HUL)," and "spiritual obsolescence" builds a bridge between the obsolete historic religious cultural heritage and the prosperous one. All these topics build up adaptive reuse, which therefore contributes to circular economy.

Holistic management and valorisation of ecclesiastical cultural heritage

With regard to religious cultural heritage, the Second Conference on Human Settlements (Habitat ll) expresses the sentiment that historical places, objects and manifestations of cultural, scientific, symbolic, spiritual and religious value are important expressions of the culture, identity and religious beliefs of societies. Their role and importance, particularly in the light of the need for cultural identity and continuity in a rapidly changing world, need to be promoted (United Nations, 1996).

The Leeuwarden Declaration states that heritage buildings, including ecclesiastic heritage, that have lost their original function, still embody cultural, historic, spatial and economic values. Through adaptation, obsolete religious heritage can find new, mixed or extended uses. As a result, their social, environmental and economic value is increased, while their cultural significance is enhanced. As such, the Leeuwarden Declaration refers to the beneficial impacts of adaptive reuse based on the four pillars: social, environmental, economic, and cultural; but, more importantly, it stresses the strong spiritual values of religious sites, which have lost the functions for which they were originally built (ACE, 2018).

Value formation in spiritual context

Based on the information from Throsby (2012), UNESCO (2013), CHCfE (2015), and Foster (2020), this research divides ecclesiastic heritage values into four categories: Cultural, Social, Environmental and Economic:

- Cultural Value incorporates inter-related, multi-dimensional values, where significance may vary depending on the particular ecclesiastical cultural heritage asset and human value judgements placed on it by society.
- Spiritual Value is associated with the sense of identity of local communities and memory of our ancestors. Mason (2002, p. 12) states that spiritual values "encompass a secular experience of wonder, awe, which can be provoked by visiting ecclesiastic heritage places." Throsby (2012) refers to intercultural understanding inspired by different communities recognising shared spiritual values.
- Emotional Value is associated with feelings of happiness, pride or agony of believers and parishioners. These emotions are rooted in the "Collective Memory" of the community, in the culture of worshiping, and symbolic reminder of important life events such as christenings, weddings and funerals (Sedova, 2020). Such collective values that people attach to the historic environment are a valid justification for preservation laws (Wells and Lixinski, 2016).
- Historical and Aesthetic Values exist where a religious building, or ensemble, possesses beauty in itself or in its current and past relationship to the surrounding landscape. Historical values also relate to identity and use of traditional building methods and vernacular structural materials, which have sustained for many centuries and therefore represent connection with and the knowledge of past generations.
- Architectural and Symbolic Values, where the symbolic value of ecclesiastical architecture is often highlighted by distinctive landmark locations together with ornate ecclesiastic interior architectural decoration, furniture and icons which embody faith and pride in the presence of a higher order.
- Political Value is defined by Mason (2002, p. 11) as "the use of heritage to build or sustain civil relations, governmental legitimacy, protest, or ideological causes." Political intervention in religious affairs can also be devastating due to social and cultural intolerance and hostility.
- Social Value stems from social connections, relationships and shared beliefs that exist due to the religious use of the ecclesiastic heritage, namely performing church services and celebrations, christenings, wedding ceremonies, funerals. Social value is based on community identity and the "Collective Memory" of individuals, which creates social cohesion and stability that has the potential to sustain even if a church function becomes redundant.
- Environmental Value is established *via* environmental impact assessment of ecclesiastic heritage on environmental sustainability.
- Economic Value stems from demand and supply in the marketplace and is influenced by location-specific existing use values, in addition to potential adaptive reuse or redevelopment values i.e., Hope Value (Pickerill, 2009). Wilkinson, Remoy and Langston (2014) observe that obsolete objects of cultural heritage have low market values based on their underutilised value in use.

Diverse values of religious cultural heritage establish a framework when owners, occupiers, worshipers, local communities, developers, financiers, sponsors and voluntary bodies will experience a different perception of the costs and benefits of adaptation, thus creating diversity in the decision-making process. The European Declaration on Cultural Diversity (COE, 2000) and the Universal Declaration on Cultural Diversity (UNESCO, 2001) recognise that respect for cultural diversity is an essential condition of human society. Successful adaptation efforts to

protect the historic religious fabric have to recognise and reconcile divergent value systems and conflicting interests of stakeholders. Collaborative approaches in decision making with regard to the future reuse of abandoned religious assets can contribute to building up "Institutional Capacity" by addressing the reality of conflict of interest between stakeholders in non-combative ways.

Stakeholder value judgements in spiritual context

Within value assessment as a process, it is suggested that the evaluation of information happens through a participatory process by bringing together all stakeholders' opinions to formulate statements of significance (Gallou and Fouseki, 2019). As such, reuse decisions regarding abandoned ecclesiastical heritage are influenced by value judgements of a diverse range of stakeholders (Sedova, 2020). Capital expenditure on cultural heritage investment projects, such as preventive maintenance, conservation, upgrading or adaptive reuse is often subjected to standard market-driven, risk averse, investment appraisal techniques (Throsby, 2012) (Pickerill, 2009; Pickerill, 2015). The Nara Document on Authenticity explores the idea that it is not wise to base value judgements within rigid set criteria, as recognition of authentic cultural heritage "may differ from culture to culture, and even within the same culture" (ICOMOS, 1994, S.11). Hutter and Rizzo (1997) refer to cultural heritage as "nomadic" due to ever changing values and social norms through time and across groups. Pignataro and Rizzo (1997) assert that the strength of regulatory control directly impacts the investment costs associated with adaptation, maintenance and ongoing restricted use. As private sector investors and developers seek to maximise profit levels, there is an inevitable danger that socio-cultural values will be sacrificed to minimise costs in order to enhance commercial values. Misguided profit orientation will deprive historic monuments with a strictly cultural (and by association spiritual) function of their integrity and intrinsic attractiveness.

Ecclesiastical impact assessment

Impact analysis can be used as a prerequisite for ecclesiastical adaptive reuse project evaluation where impacts can be translated into potential direct and indirect costs and benefits. Landry et al. (1993) defines "Impact" as a dynamic concept which presupposes a relationship of cause and effect that can be measured through the evaluation of the outcomes of particular actions, suggesting that an impact is the power to produce change. Ost and Van (1998) identify two forms of analysis aimed at identifying actions, perceptions or attitudes in the context of cultural built heritage. Both methods utilise a description of economic flows in the impact area, identification of direct and indirect effects and a differentiation of stakeholders.

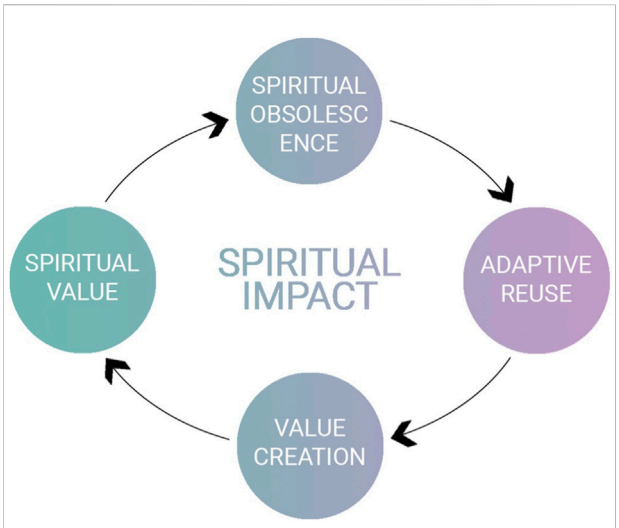

FIGURE 2
Spiritual value and impact. Source: Own.

- Impact Analysis (a non-decision-making process) encompassing analysis of the costs and benefits generated by the presence and/or utilisation of cultural built heritage in its current state.
- Project Evaluation (a decision-making process) encompassing analysis of the costs and benefits that will eventually be generated by some form of physical intervention over a period of time.

CHCfE (2015) proposes a holistic framework approach, utilising four interrelated impact domains (social, cultural, economic and environmental), to highlight the relationship between value and impact in the context of cultural heritage. This four-pillar framework approach is based on the proviso that the assessment of value and the decision to undertake heritage activities are dependent on stakeholder perceptions of value versus impact. The relationship between tangible and intangible values and impacts of heritage is a two-fold process where value can affect impacts which in turn can lead to changes in value (CHCfE, 2015).

Utilizing this approach, integrated values and impacts are connected *via* the process of adaptive reuse within a religious structure's life cycle (see Figure 2). Adaptive reuse of underutilised or abandoned ecclesiastic heritage may alter value perceptions by stakeholders, which in turn may generate impacts (positive and negative impacts), which may further influence value perceptions. Value creation, which results in added values such as community amenity improvement, public goods and social interaction, can bring about both

TABLE 1 Value judgements, forms, aspects, and factors of obsolescence particular to ecclesiastic architecture. Source: Adapted from Wilkinson (2011).

Form of obsolescence	Aspects	Factors	Erosion of Value(s)
Physical (structural)	Structural stability	Structure failure	Architectural and Symbolic Value
	Weather tightness	Deterioration	
	Overall performance	Dilapidation	
	Envelope quality	Urban blight	
Functional (locational)	Fulfillment of purpose	Decreased utility	Spiritual Values
	Degree of use	Inadequacy	
	Technological adequacy	Incapacity	
	Contextual fit	Errors and omissions in the building's layout and form	
		Technical advances	
Economic (financial)	Cost effectiveness	Rental income levels	Economic Value
	Rate of return	Capital value *versus* adaptation value	
	Depreciation	Oversupply or drop in demand	
	Economic rationale	Imbalance between costs and benefits	
	Demand of services		
Social (cultural)	Satisfaction of human needs	Demographic trends and shifts	Social and Emotional Values
	Cultural requirements	Changes in trends and society needs	
	Local expectations	Changes in expectancy levels	
Legal (tenure)	Compliance with statutory regulations	Changes in legislation or regulations	Political Values
		Changes in planning policies	
		Existing adverse legislation	
		Nuisances and hazards—dangerous buildings	
		Disagreements between landlord and occupier	
Aesthetic (visual)	Style of architecture is no longer modern	Buildings with additional parts dedicated to different times	Historical and Aesthetic Values
	Outdated appearance	Lost original parts of the appearance	
Environmental	Environmental stability	Environmental changes	Environmental Value
Site	Site value	Disbalance between site and building value	Economic Value (Residual site Value)
	Building value		
Spiritual	Religious/social identity	Diminished capacity to provide a religious/social identity and opportunities of intense socialization	Spiritual Values
	Socialization		

tangible and intangible positive externalities to the neighbourhood (Kee, 2019).

Forms of ecclesiastical obsolescence and dimensions of adaptability

Obsolescence can be defined as "the state of becoming old-fashioned and no longer useful" (Hornby, 2010, p. 1050). Obsolete buildings negatively impact on the "sense of place" of urban/rural settlements, creating a downward pressure on social, cultural, environmental and economic values. Numerous literature sources deal with categorisation of the forms of obsolescence relating to cultural heritage, including Physical, Functional, Economic, Social, Legal, Aesthetic, Environmental, and Site (Williams, 1986; Barras and Clark, 1996; Wilkinson, 2011; Wilkinson et al., 2014).

Even though religious beliefs remain strong in contemporary society, religious behaviour is changing and this is happening on contradictory paths with church attendance declining and people increasingly describing their beliefs as "spiritual," rather than "religious" (Inglehart and Baker, 2000). Pinelli and Einstein (2019) argue that these apparently contradictory trends can be reconciled through an examination of religion's ability to satisfy the need for socialization and social belonging. Further, they suggest that in modern society, religion has a diminishing capacity to provide social identity and opportunities of intense socialization. As such, religious heritage assets of many countries have lost their function. This process indicates the presence of a 'Spiritual' form of obsolescence for ecclesiastical heritage.

TABLE 2 Graphical presentation of case studies: New uses along with forms of obsolescence and dimensions of adaptability.

№	Project title	New use	Pre-adaptation form of obsolescence	Dimension of adaptability	Type of use interventions
1	Community Centre "De Petrus" (Vught, Netherlands)	Multifunctional centre: library, museum, bar, shops	Social Spiritual	Convertible	Art and Cultural Activities
2	Church of Santa Barbara—"Church Brigade" (Llanera, Spain)	Skate park	Social Spiritual	Convertible	Community and Institutional Uses
3	Church of a Former Military Hospital—Jane Restaurant (Antwerp, Netherlands)	Restaurant	Social Spiritual	Convertible	Commercial Post-Religious Use
4	St. Paul and St. George Church (Edinburgh, United Kingdom)	Place of worship with opportunities for flexible use	Economic Functional	Refitable	Extended Religious Use
5	Woonkapel—Chapel Residence (Utrecht, Netherlands)	Single-family house	Social Spiritual	Convertible	Residential Post-Religious Use
6	The Chapel on the Hill (Forest-In-Teesdale, United Kingdom)	Single-family house	Social Aesthetic Physical Spiritual	Convertible	Residential Post-Religious Use
7	Convent of Sant Francesc (Santpedor, Spain)	Auditorium, multipurpose cultural space	Physical Spiritual	Convertible	Art and Cultural Activities
8	Nottingham Church Bar (Nottingham, United Kingdom)	Bar-restaurant	Social Spiritual	Convertible	Commercial Post-Religious Use
9	Selexyz Dominicanen (Maastricht, Netherlands)	Bookstore	Social Spiritual	Convertible	Commercial Post-Religious Use
10	Martin's Patershof Hotel (Mechelen, Belgium)	Hotel	Social Spiritual	Convertible	Commercial Post-Religious Use
11	St. Sebastian Kindergarten (Munster, Germany)	Kindergarten	Social Economic Spiritual	Convertible	Community and Institutional Uses
12	National Marine Museum of Ireland (Dun Laoghaire, Ireland)	Marine museum	Social Economic Functional Spiritual	Convertible	Art and Cultural Activities
13	Reption Park Swimming Pool (Woodford, United Kingdom)	Swimming pool	Social Economic Spiritual	Convertible	Community and Institutional Uses
14	Gattopardo Milano (Milan, Italy)	Bar, disco	Social Economic Spiritual	Convertible	Commercial Post-Religious Use
15	Old Church of San Lorenzo (Venice, Italy)	Multipurpose cultural space	Social Physical Spiritual	Refitable	Art and Cultural Activities
16	Supercomputing Centre (Barcelona, Spain)	Office	Social Economic Spiritual	Convertible	Office Post-Religious Use
17	San Barnaba (Venice, Italy)	Exhibition centre	Social Spiritual	Convertible	Art and Cultural Activities
18	Fabrica (Brighton, United Kingdom)	Centre for contemporary art	Social Functional Spiritual	Convertible	Art and Cultural Activities

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TABLE 2 (*Continued*) Graphical presentation of case studies: New uses along with forms of obsolescence and dimensions of adaptability.

№	Project title	New use	Pre-adaptation form of obsolescence	Dimension of adaptability	Type of use interventions
19	Church of San Sisto al Carrobbio (Milan, Italy)	Museum-studio of Francesco Messina	Social Spiritual	Convertible	Art and Cultural Activities
20	Church of Santa Teresa and Giuseppe (Milan, Italy)	Media library	Social Spiritual	Convertible	Community and Institutional Uses
21	Church of San Paolo Converso (Milan, Italy)	Office	Social Spiritual	Convertible	Office Post-Religious Use
22	Private House in a Church (Italy)	Single-family house	Social Functional Spiritual	Convertible	Residential Post-Religious Use
23	Church of San Carpoforo (Milan, Italy)	Multi-art centre of Brera Academy of fine arts	Social Spiritual	Refitable	Community and Institutional Uses
24	Church of Saint Simone and Guida (Milan, Italy)	Theatre school	Social Spiritual	Convertible	Community and Institutional Uses
25	St. Maximin's Abbey (Trier, Germany)	Concert hall, school gym	Aesthetic Functional Spiritual	Convertible	Community and Institutional Uses
26	Bethlehem-Kirche (Hamburg, Germany)	Kindergarten	Social Economic Spiritual	Convertible	Community and Institutional Uses
27	Cantonese Eatery Duddell's (London, United Kingdom)	Restaurant	Social Spiritual	Convertible	Commercial Post-Religious Use
28	Red Brick Building (Brussels, Belgium)	Office	Social Functional Spiritual	Convertible	Office Post-Religious Use
29	Kaiser Wilhelm Memorial Church (Berlin, Germany)	Church, museum, memorial complex	Physical	Refitable	Extended Religious Use
30	Carmo Convent (Lisbon, Portugal)	Museum	Physical Spiritual	Convertible	Art and Cultural Activities
31	Rievaulx Abbey (Helmsley, United Kingdom)	Museum	Physical Spiritual	Convertible	Art and Cultural Activities
32	Santa Maria de Vilanova de la Banca (Vilanova de la Banca, Spain)	Museum, multi-purpose space	Physical Spiritual	Refitable	Art and Cultural Activities
33	St. Martin-in-the-Fields (London, United Kingdom)	Parish church and concert venue	Economic Functional	Adjustable	Extended Religious Use
34	Stadtkirche Müncheberg (Muncheberg, Germany)	Parish church, library and venue place	Economic Functional	Adjustable	Extended Religious Use
35	Paul Street—EC2 (Shoreditch, United Kingdom)	Apartments, residential	Physical Spiritual	Scalable	Residential Post-Religious Use
36	The South River Vineyard (Shalersville was moved to Harpersfield, United States)	Winery	Social Physical Spiritual	Movable	Commercial Post-Religious Use
37	Children's Day School (San-Francisco, United States)	School	Social Economic Spiritual	Convertible	Community and Institutional Uses
38	Catalysis (Seattle, United States)	Office of marketing agency	Social Functional Spiritual	Convertible	Office Post-Religious Use

(Continued on following page)

TABLE 2 (*Continued*) Graphical presentation of case studies: New uses along with forms of obsolescence and dimensions of adaptability.

№	Project title	New use	Pre-adaptation form of obsolescence	Dimension of adaptability	Type of use interventions
39	Fremont Abbey (Seattle, United States)	Arts centre	Social Functional Spiritual	Convertible	Art and Cultural Activities
40	Transformazium (Braddock, United States)	Community centre	Social Functional Physical Spiritual	Convertible	Community and Institutional Uses
41	The Castle (Beloit, United States)	Multi-purpose venue space	Social Economic Spiritual	Refitable	Art and Cultural Activities
42	Sacred Heart (Augusta, United States)	Venue space, office	Social Economic Spiritual	Convertible	Office Post-Religious Use
43	McColl Centre (North Carolina, United States)	Visual arts museum	Social Functional Spiritual	Convertible	Art and Cultural Activities
44	Former Church in Surry Hills (Surry Hills, Australia)	Office	Economic Spiritual	Convertible	Office Post-Religious Use
45	Hospital Hotel (Tel Aviv, Israel)	Hotel	Functional Spiritual	Convertible	Commercial Post-Religious Use
46	Thomas Burgh House (Dublin, Ireland)	Office	Social Aesthetic Spiritual	Convertible	Office Post-Religious Use
47	Rush Library (Rush, Ireland)	Library	Social Spiritual	Convertible	Community and Institutional Uses
48	All Saints Church (Hereford, United Kingdom)	Parish church, community centre and a cafe	Economic Functional	Adjustable	Extended Religious Use
49	The 'Waterdog' (Limburg, Belgium)	Workplace	Social Aesthetic Spiritual	Convertible	Office Post-Religious Use
50	The Cathedral of Liverpool (Liverpool, United Kingdom)	Parish church and exhibition space	Functional	Versatile	Extended Religious Use
51	Pearse Lyons Distillery (Dublin, Ireland)	Distillery	Social Economic Aesthetic Spiritual	Convertible	Commercial Post-Religious Use
52	Smock Alley Theatre (Dublin, Ireland)	Theatre	Social Spiritual	Convertible	Art and Cultural Activities
53	The Holy Cross Church and Parish Centre (Dundrum, Ireland)	Parish church and parish centre	Functional	Adjustable	Extended Religious Use
54	The Church (Former St. Mary's Church) (Dublin, Ireland)	Restaurant	Social Functional Spiritual	Convertible	Commercial Post-Religious Use
55	Medieval Mile Museum (Kilkenny, Ireland)	Museum	Social Functional Spiritual	Convertible	Art and Cultural Activities

(Continued on following page)

TABLE 2 (*Continued*) Graphical presentation of case studies: New uses along with forms of obsolescence and dimensions of adaptability.

№	Project title	New use	Pre-adaptation form of obsolescence	Dimension of adaptability	Type of use interventions
56	St. Laurence's Chapel, Grangegorman (Dublin, Ireland)	Multi-purpose venue space	Social Functional Economic Spiritual	Refitable	Community and Institutional Uses
57	St. Andrew's Church (Dublin, Ireland)	Design and exhibition centre with café and offices	Social Spiritual	Convertible	Commercial Post-Religious Use
58	St. George's Church (Dublin, Ireland)	Office	Social Economic Spiritual	Convertible	Office Post-Religious Use
59	Scots Presbyterian Church (Dublin, Ireland)	Office	Social Spiritual	Convertible	Office Post-Religious Use
60	St. Kevin's Church (Dublin, Ireland)	Apartments, residential	Social Spiritual	Convertible	Residential Post-Religious Use
61	Cahernorry Church (Ballyneety, Ireland)	Single-family house	Social Spiritual	Convertible	Residential Post-Religious Use
62	Franciscan Church (Drogheda, Ireland)	Exhibition space	Social Spiritual	Convertible	Art and Cultural Activities
63	St. Aidan's Church (Brookline, United States)	Apartments, residential	Social Spiritual	Convertible	Residential Post-Religious Use
64	The Church of St. Peter Chesil (Winchester, United Kingdom)	Theatre	Social Physical Spiritual	Convertible	Art and Cultural Activities
65	St. Nicholas Collegiate Church (Galway, Ireland)	Shared place of worship	Functional	Adjustable	Extended Religious Use

Value Judgements, Forms, Aspects, and Factors of Obsolescence particular to ecclesiastic architecture are presented in Table 1.

To draw some broad observations: a decline in architectural and symbolic values can result in the development of physical obsolescence. Low or declining spiritual (religious) values lead to the development of functional forms of obsolescence. Altered perceptions by communities of the social value of ecclesiastic heritage impact social obsolescence, while disembodiment of political value can potentially provoke every form of obsolescence. As the economic (market) value of abandoned religious structures (bricks and mortar) declines over time due to obsolescence, the residual site value (alternative development market value of the land beneath the building) will increase until the marketplace may dictate demolition of the historic structure, unless it is protected by heritage legislation.

Dimensions of Adaptability indicate what types of changes can potentially be applied to a building to overcome its obsolescence. This research paper utilizes six general cultural heritage dimensions of adaptability—Adjustable, Versatile, Refitable, Convertible, Scalable and Movable, identified by Heidrich et al. (2017), which have been adapted in religious context.

In religious context,

- Adjustable dimension of adaptability indicates a "change of tasks" by users on a daily/monthly basis. "Change of tasks" means having a multi-purpose space inside a former church, ready to be used for multiple tasks with no/few adjustments. For instance, dividing space with movable walls to ensure the change of tasks.
- Versatile dimension of adaptability indicates a "change of space" and location of services by users on a daily/monthly basis. This may be possible through using movable furniture and equipment.
- Refitable dimension of adaptability indicates a "change of performance" that can be achieved by improving the performance of one or more components, without the need for replacing the entire system (Heidrich et al., 2017).
- Convertible dimension of adaptability indicates a "change of function," which may be achieved through adaptive reuse of a church.
- Scalable dimension of adaptability indicates a "change of capacity," such as being able to increase/decrease surfaces and volumes of a church without major effort.

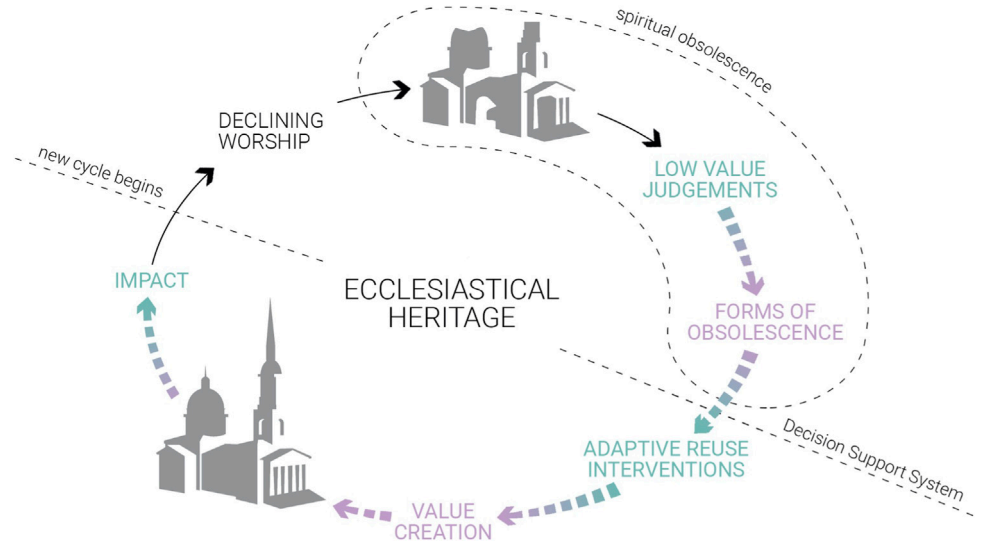

FIGURE 3
Focus of the study. Source: Own.

- Movable dimension of adaptability indicates "change of the location in the urban fabric," which means being able to move the entire building, which is usually possible only when adapting wooden log churches.

Relationship patterns between stakeholder perceptions of value and obsolescence

Stakeholder perceptions of obsolescence and related loss in value in relation to abandoned ecclesiastical built heritage has the potential to combine into a vicious downward spiral which takes momentum as the years pass by. Each form of obsolescence is the result of a decrease of a particular value, which further influences the presence of obsolescence and leads to further erosion of ecclesiastic value. The relationship between "nomadic" perceptions of value and the resultant impact on various forms of obsolescence have a complex and essentially reciprocal nature, although connections between given values of ecclesiastic cultural heritage and forms of obsolescence are not static as human perceptions change over time. While it is evident that observations on the relationship between value and obsolescence cannot be ranked in order nor are the relationships mutually exclusive, the following observations provide a general idea of the complex relationship between value judgements and forms of obsolescence. Essentially, erosion of a combination of cultural, social, environmental, and economic values in different proportions impacts on spiritual forms of obsolescence, depending on the variables of each case.

Methods

Sixty-five international adaptive reuse case studies have been collated and analysed to establish connections between ecclesiastical values, forms of obsolescence, new uses, value creation, impact and sustainable development. Based on the study of the types of Values and Forms of Obsolescence attributed to religious heritage, the authors study 1) the presence of different pre-adaptation Forms of Obsolescence of the case studies; 2) What Use Interventions can potentially be applied to heritage with such obsolescence; 3) What added value can be created after the adaptation applying reuse Interventions; 4) What impact can be generated once the religious heritage is adapted. These aspects and their connections with each other, which will be observed among the case studies of this paper, are highlighted in Figure 3. Dimensions of Adaptability indicate what types of changes can potentially be applied to a building to overcome its obsolescence. This research paper utilizes six general cultural heritage dimensions of adaptability, which were explained in more detail in the previous section, — Adjustable, Versatile, Refitable, Convertible, Scalable and Movable, identified by Heidrich et al. (2017), which have been adapted in religious context.

The forms of obsolescence, new uses and use interventions among case studies

In previous eras, cultural and political factors were the predominate forces at work behind some of the more notable

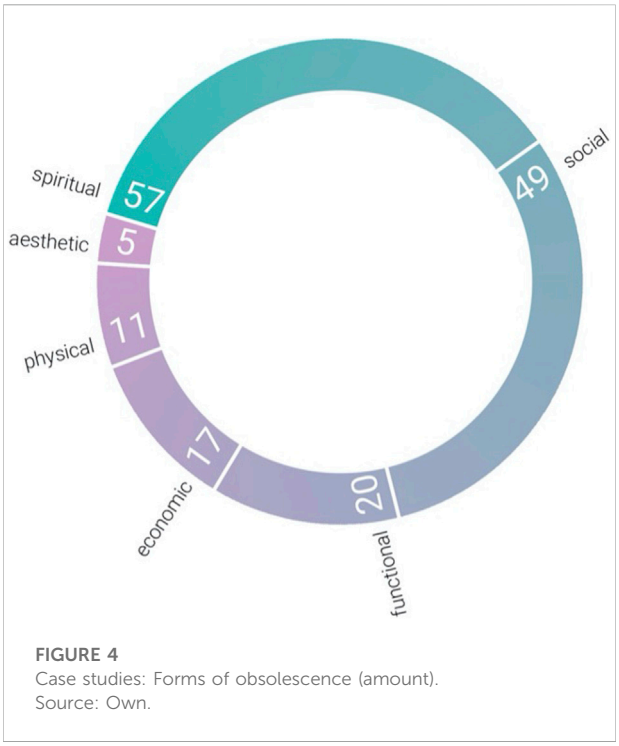

FIGURE 4
Case studies: Forms of obsolescence (amount).
Source: Own.

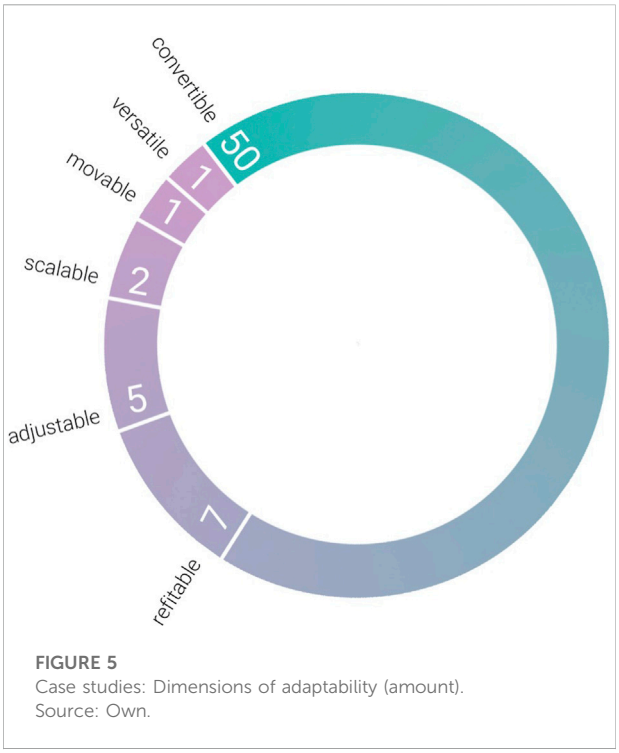

FIGURE 5
Case studies: Dimensions of adaptability (amount).
Source: Own.

adaptations of religious heritage projects (Ahn 2007). Today, there are a wide range of solutions that have been generated for adaptation of churches (Kiley 2004) exhibiting various Forms of Obsolescence; and it is notable that a building may be characterized by several Forms at the same time. This research studies what kinds of adaptation solutions were generated based on different Forms of Obsolescence and Dimensions of Adaptability in 65 selected Case Studies from Europe, the United States, Australia, and Asia (see Table 2). The case studies were selected based on open data published on the Internet. The Author selected the cases which, in her opinion, are pieces of high-quality architecture. The Forms of Obsolescence (pre-adaptation) were established based on the observations by the authors, while the decision on the Dimension of Adaptability particular to each Case Study was based on the type of new use.

New uses applied to the case studies are categorised into different types of Use Interventions, as they indicate different types of changes applied to a religious building and are divided into Extended Religious Use and/or Functional Conversion. Extended Religious Use means shared use, in time or in space, of a church for religious and non-religious purposes. Functional conversion means adaptive reuse to a single or mixed non-religious use that is further categorised as Arts and Cultural Activities, Community and Institutional Uses, Commercial Post-Religious Use (retail, hotel, restaurants), Residential Post-Religious Use, and Office Post-Religious Use.

Results

The ratios for Forms of Obsolescence represented in Figure 4 illustrate that the majority of Case Studies (88%) primarily exhibit Spiritual Form of Obsolescence (57 out of 65 cases), while zero cases indicate any Legal Obsolescence. All case studies exhibiting Spiritual Form of Obsolescence underwent a change of "function" indicating "Convertible" Dimension of Adaptability. Thus, the Authors observe that adaptive reuse of religious architecture involving a change of function (Convertible) to a new non-religious use followed a period of Spiritual Obsolescence where the ecclesiastical resources concerned irrevocably lost their ability to remain a place for worship and socialization.

The ratios for Dimensions of Adaptability for each Case Study are represented in Figure 5, resulting in 50 out of 65 cases exhibiting primarily convertibility (Convertible Dimension of Adaptability), meaning that the feasibility of the original function change is centred around the change of spaces and services.

Generally, the assessment of Impact on ecclesiastical cultural heritage rests on four interrelated pillars of sustainable development (Economic, Social, Cultural and Environmental), serving as a sustainable base for the assessment of cultural heritage impact (CHCfE, 2015).

Case study observations on the reciprocal relationship between Use Interventions, Forms of Obsolescence and Dimensions of Adaptability are as follows:

TABLE 3 The potential areas of the impact of the adaptation of ecclesiastic heritage[a]. Source: own. The methodology was adapted from CHCfE (2015).

The domains	The sub-domains	A	B	C	D	Positive impact	Negative impact	Affected stakeholders
Built Heritage and Real Estate Market	Real Estate Market	o			o	- High demand to live in a neighborhood of the historical church	- Heritage status of a church can bring restrictions and difficulties in the neighborhood	The Church, the Investor, the Developer, the Community, the Public
	Regional Competitiveness	o	o		o		- restrictions for owners regarding the use and adaptation	
	Regional Attractiveness	o	o		o	- an increase of property prices	- increase of property prices CHCfE (2015)	
Labour Market	-	o	o			- direct and indirect creation of jobs	- part-time jobs - a need to train and educate workers	The Investor, the Developer, the Community, the Public
Economic Capital	Gross Value Added (GVA)	o				- generator of tax revenue for public authorities, both from the economic activities of heritage-related sectors and indirect or induced activities	- weak sustainable development when solely economic capital is considered CHCfE (2015)	The Church, the Investor, the Developer
	Return of Investment	o				- spillovers from heritage-oriented projects leading to further investment		
	Tax Income	o				- track record on good return on investment CHCfE (2015)		
	Tax Reductions	o						
	Social Programs Funding	o	o					
Sense of a Place	Place Branding	o	o			- preservation of traditions	- replacing history with a beautiful "image" of cultural heritage	The Community
	Image and Symbols Creation			o		- attractive impact on people's sense of identity	- visitors congestion	
	Creativity and Innovation			o		- attractive image of a building	- loss of personal affiliation to cultural heritage	
	Visual Comfort	o		o	o	- attractive image of cities, districts		
	Place-Making		o		o			
	Magnet Effect		o					
Religious Identity	Religious Architecture Language			o	o	- creation of intangible value	- social exclusion	The Church, the Community
	Sense of Religious Place		o	o	o	- symbolic value	- the study of vernacular knowledge may need time and human resources	
	Vernacular Knowledge			o	o	- spiritual value		
	Knowledge of Tradition	o	o	o		- preservation of traditions		
	National Identity		o	o		- creation of "vernacular" jobs		
	"Collective Memory"		o	o				
	Respect of The House Of God		o	o				
	Community Identity		o					
Environmental Sustainability	Historic Cultural Landscape			o	o	- sustainable management of cultural heritage stock	- high consumption of resources	The Public
	Reducing Urban Sprawl	o			o	- reducing demolition and rebuilding	- low ecological index of buildings	
	Life Cycle Prolongation				o	- prolongation of the physical life of buildings		
	Structural Resistance				o	- influence on demographic change		

(Continued on following page)

TABLE 3 (*Continued*) The potential areas of the impact of the adaptation of ecclesiastic heritage[a]. Source: own. The methodology was adapted from CHCfE (2015).

The domains	The sub-domains	A	B	C	D	Positive impact	Negative impact	Affected stakeholders
Community Participation	Education Engagement	o	o	o		- social inclusion	- disintegration of "native" users	The Church, the Community
	Sport Engagement	o	o			- sense of civic pride	- social exclusion	
	Art Engagement	o	o	o		- creation of inclusive environments		
	Social Wellbeing		o			- community engagement		
	Tourism	o	o	o		- gaining knowledge and skills		
	Experience		o	o		- personal development		
						- basis for community cooperation		
Community Interest	Social Cohesion		o			- basis for community cooperation	- "Not in My Backyard" attitudes CHCfE (2015)	The Church, the Investor, the Developer, the Community, the Public
	Community Involvement		o			- satisfaction of social wants		
	Continuity of Social Life		o			- local enterprises		
	Public Interest	o	o			- interests of all stakeholders		
	Private Interest	o						

[a]Names of the columns: A—Economic aspect; B—Social aspect; C—Cultural aspect; D—Environmental aspect.

- Based on the observation of case studies, Extended Religious Use is a means of adaptive reuse for ecclesiastic heritage with Economic or Functional Forms of Obsolescence. The religious heritage assets suitable for this type of Use Intervention should have Refitable or Adjustable Dimension of Adaptability.
- The use for Arts and Cultural Activities was successfully applied for cultural heritage with Spiritual, Social, Physical, Economic, or Functional Forms of Obsolescence; and Convertible or Refitable Dimension of Adaptability.
- Community and Institutional Uses were applied to ecclesiastic heritage with Spiritual, Social, Economic, Aesthetic, Functional, and Physical Forms of Obsolescence; and Convertible or Refitable Dimension of Adaptability.
- Commercial Post-Religious Use was applied to buildings with Spiritual, Social, Economic, Physical, Aesthetic, and Functional Forms of Obsolescence; and Convertible or Movable Dimension of Adaptability.
- Residential Post-Religious Use was applied to religious buildings with Spiritual, Social, Aesthetic, Physical, and Functional Forms of Obsolescence; and Convertible or Scalable Dimension of Adaptability.
- Office Post-Religious Use was applied to buildings with Spiritual, Social, Economic, Functional, and Aesthetic Forms of Obsolescence; and only Convertible Dimension of Adaptability.

Case study observations on the reciprocal relationship between Use Interventions and Value Creation are as follows:

- Considering the fact that particular Forms of Obsolescence follow the decrease of correspondent Value judgements by society, each type of Use Interventions is intended to support Value Creation for ecclesiastical cultural heritage.
- The adaptation of ecclesiastic heritage to Extended Religious Use can overcome the lack of Economic, Cultural and Spiritual values. As such, Extended Religious Use generates Economic and Cultural (spiritual) value.
- The adaptation to Arts and Cultural Activities can overcome the lack of given Social, Cultural (architectural, symbolic, spiritual) and Economic values. As such, Arts and Cultural Activities generate Social, Architectural, Symbolic, Economic, and Spiritual values.
- Adaptation reuse to Community and Institutional Uses and Commercial Post-Religious Use can overcome the lack of Social, Economic, Cultural (architectural, symbolic, historical, aesthetic, and spiritual) values. As such, Community and Institutional Uses and Commercial Post-Religious Use generate Social, Economic, and Cultural (architectural, symbolic, historical, aesthetic and spiritual) value.
- The adaptation to Residential Post-Religious Use can overcome the lack of Social and Cultural (historical, aesthetic, architectural, symbolic and spiritual) values. As such, Residential Post-Religious Use generates Social and Cultural (historical, aesthetic, architectural, symbolic and spiritual) values.
- The adaptation to Office Post-Religious Use can overcome the lack of Social, Economic, and Cultural (spiritual, historical, aesthetic) values of obsolete and abandoned religious assets. As such, Office Post-Religious Use

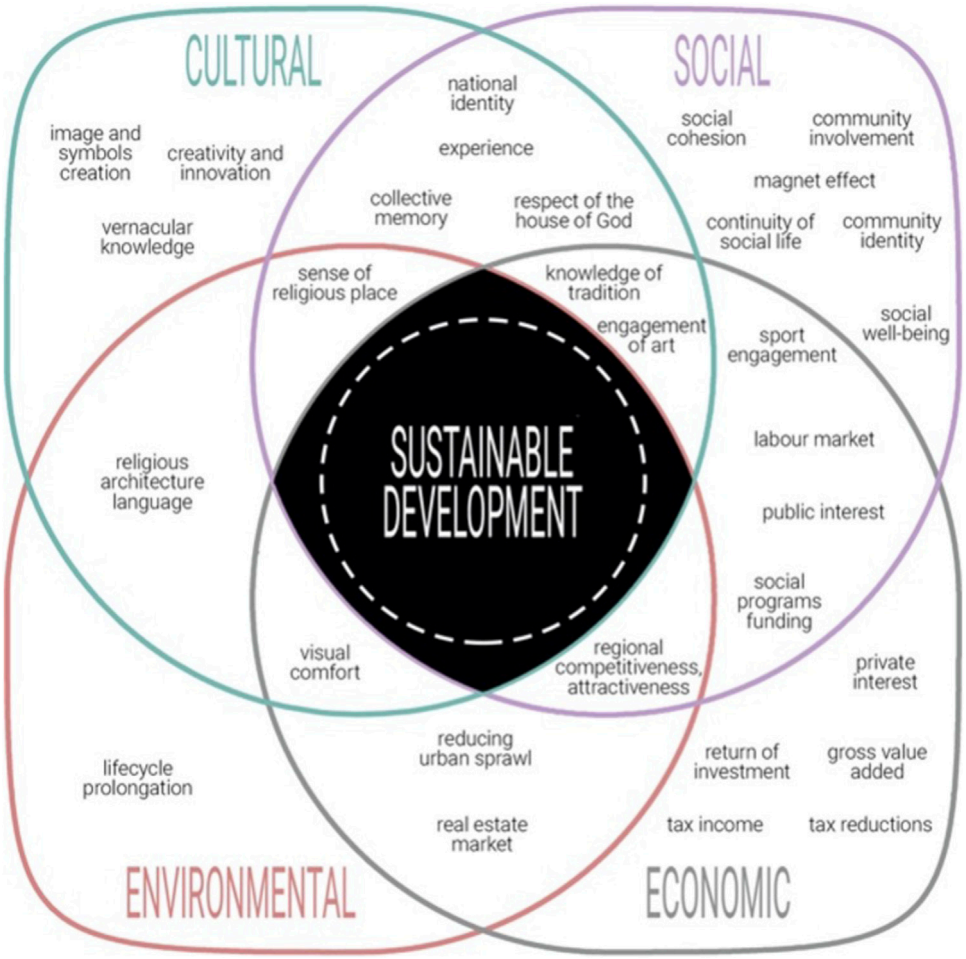

FIGURE 6
Four impacts of the adaptation of religious built cultural heritage as four pillars of sustainable development. Source: own. The methodology was adapted from CHCfE (2015).

generates Social, Economic, and Cultural (spiritual, historical, aesthetic) values.

Table 3 highlights the potential areas of impact following the adaptive reuse of ecclesiastic heritage.

The combination of Impacts (economic, social, cultural, and environmental) forming a holistic landscape perspective and the categorization of Domains were provided by CHCfE (2015) and adapted for ecclesiastical Impact evaluation. The framework of Impact Domains of cultural heritage, and religious cultural heritage in particular, presented in Table 3 serves as a sustainable base for the assessment of cultural heritage impact. The Domains presented in Table 3 are the Domains of potential impact of adaptation. The four pillars of assessing the Impact of the adaptation of religious buildings are economic, cultural, social, and environmental. Each pillar is the amalgamation of various Domains, with some of them attributable to two or three pillars at once, depending on the Domain (see Figure 6). The creation of sub-domains and the division into identified positive and negative ecclesiastical impacts were based on case study observations by the Author. Among the most valuable sub-domains (which contribute to three pillars of sustainable development at once) are the following: regional competitiveness, regional attractiveness, visual comfort, place-making, sense of religious space, knowledge of tradition, education engagement, art engagement, and tourism.

Ideally, impacts should reflect total expenditure (public and private) per capita spent on the preservation, protection and conservation of said cultural heritage, level of

government (national, regional and local/municipal), type of expenditure (operating expenditure/investment) and type of private funding (donations in kind, private non-profit sector and sponsorship), as it indicates the achievement of Sustainable Development Goal 11 of SDGs (United Nations, 2015).

Each impact is presented according to affected stakeholders, as it helps to understand how the adaptive reuse of ecclesiastic heritage impacts on society. The Church stakeholders include two of the main functional groups: the Archdiocesan organisation and parish, or ex-parish, which includes ex-believers who used to attend church services in the former church. The Investor consists of insurance companies, independent investors, professionals who have capital to invest, commercial banks, private equity firms, and real estate investment trusts (REITs). The Developer represents organisations that bring together investors, producers and marketeers during the adaptive reuse process. The Public incorporates policymakers and regulators, including government administrations, local authorities, fire and building surveyors. The Community, in the adaptive reuse of religious heritage, includes future users and local community who live in the district, non-profit organisations, and parishioners (or ex-parishioners).

The conducted analysis shows that every Domain incorporates several layers of inter-related impacts, and sometimes overlapping economic, social, cultural and environmental impacts. Some brief observations can be made in relation to the sixty-five international case studies:

- "Built Heritage and Real Estate Market" Domain generates lower social, and higher economic and environmental impacts with potential for social, economic and environmental value creation;
- "Labour Market" generates equally economic and social impacts with potential for economic and social value creation;
- "Economic Capital" generates higher economic and lower social impact with potential for economic and social value creation;
- "Sense of a Place" generates higher social and cultural impacts, and lower economic and environmental impacts with potential for social, cultural, economic and environmental value creation;
- "Religious Identity" generates higher social and cultural impacts, and lower economic and environmental impacts with potential for social, cultural, economic and environmental value creation;
- "Environmental Sustainability" generates higher environmental impacts, and lower economic and cultural impacts with potential environmental, economic and cultural value creation;
- "Community Participation" generates higher social impact, and lower economic and cultural impacts with potential for social, economic and cultural value creation;
- "Community Interest" generates higher social impact and lower economic impact with potential for social and economic value creation.

Discussion

Sixty-five (65) international case studies were examined to explore creative holistic solutions to re-integrating underutilised and disused religious assets back into contemporary urban and rural landscapes. Based on the case studies analysis, this paper explained different values, which can be generated by adaptive reuse of religious built cultural heritage. Value formation in spiritual context based on recognition of the social, cultural, and environmental values and also relying on the social, cultural, and environmental impacts leads to the sustainable development of obsolete churches. The weighting of the likely social, cultural, and environmental impacts of adaptive reuse directly influences the decisions to undertake adaptive reuse projects, based on the assessment of the social, cultural and environmental value judgements of religious objects. It is important to state that in the majority of Cases the economic impact based on the assessment of economic values can be very low, since religious structures are unique architectural objects and historically are not associated with economic (market) values. Throsby (2012) points out the necessity of remembering, when talking about former churches as market objects, that the cultural attributes of religious heritage must also be studied independently from the economic attributes it might possess. Having said that, the case studies indicate that in some instances, sensitive adaptive reuse to Post Religious Uses (Arts and Culture, Residential, Office) may open the door to positive inflows of investment capital with corresponding market impacts based on the economic values attached to new and extended uses.

The conducted analysis provides an insight into how adaptive reuse of abandoned ecclesiastical cultural heritage can be viewed within a circular economy (CE) holistic perspective, by highlighting the multidimensional relationships at play to better understand the potential contribution of a CE framework to achieve human-centred historic landscapes.

This analysis and dialogue on possible new forms of use for religious heritage is mindful of the necessity to respect and protect diverse cultural beliefs and the collective memories of past, present and future communities - worshipers and non-worshipers alike. In this regard, it is important to acknowledge that creative adaptive reuse solutions for ecclesiastical heritage assets are not always directly transferable between regions and cultures due to differing traditional spiritual beliefs and value systems.

Supporting cultural diversity by reintegrating abandoned religious resources of all faiths (diverse ideas, beliefs, traditions and collective memory of the religious site) back into the contemporary urban fabric of communities has the potential to yield benefits that contribute to cultural capital.

Data availability statement

The original contributions presented in the study are included in the article/supplementary material, further inquiries can be directed to the corresponding author.

Author contributions

The author confirms being the sole contributor of this work and has approved it for publication.

Conflict of interest

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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