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02 |

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## Protection and Reuse of Industrial Heritage: Dilemmas, Problems, Examples



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**Protection and Reuse of Industrial Heritage:  
Dilemmas, Problems, Examples**

edited by Sonja Ifko and Marko Stokin

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# Content

<b>Content.....</b>	<b>3</b>
<b>Editorial.....</b>	<b>5</b>
<b>Reviews.....</b>	<b>6</b>
<b>A Legal, Administrative and Professional Challenges</b>	
Robert Pickard	
<b>The Council of Europe and the Industrial Heritage: A UK exemplar of the rehabilitated industrial heritage as a resource for society.....</b>	<b>9</b>
Mirjana Roter Blagojević, Marko Nikolić	
<b>Dilemmas and Problems in Active Reuse of Belgrade Industrial Architecture - The Case Study of the Sava River Area.....</b>	<b>25</b>
Mary McMoghan	
<b>Protective Measures For The Conservation Of Ireland’s Industrial Heritage.....</b>	<b>37</b>
<b>B Authenticity and Integrity in Reuse Processes</b>	
Sonja Ifko	
<b>Protection of Authenticity and Integrity of Industrial Heritage Sites in Reuse Projects.....</b>	<b>45</b>
Aleksandra Đukić, Ana Špirić, Tijana Vujić	
<b>Urban Design Competition and Megaprojects in a Context of Identity of Cultural Heritage: Case Study Belgrade`s Riverfronts.....</b>	<b>59</b>
Aida Idrizbegović Zgonić, Jasenka Čakarić	
<b>Industrial Legacy of Electric Powerplants in Bosnia and Herzegovina.....</b>	<b>73</b>
<b>C Managemet of Industrial heritage: Experiences and Examples</b>	
Stephen Hughes	
<b>TICCIH, ICOMOS &amp; The World Heritage.....</b>	<b>83</b>
Goran Arčabić	
<b>Museum Project Zagreb Industrial Heritage: History, State of Affairs, Outlook: an Impetus for Raising the Awareness of Industrial Legacy.....</b>	<b>101</b>

Tatajana Dizdarevič, Martina Peljhan <b>Preservation, Restoration and Revitalization of the Idrija Mercury Mine Smelting Plant Area – Part of the ‘Heritage of Mercury. Almadén and Idrija’ UNESCO Site.....</b>	<b>113</b>
Slavica Stamatović Vučković <b>Post-industrial Montenegro: Potentials of Industrial Heritage .....</b>	<b>123</b>
Blerta Spahija, Ramadan Aliu, Safete Veliu <b>Industrial Heritage as Potential for Sustainable Economic Development.....</b>	<b>135</b>
Sonja Ifko, Jelka Pirkovič <b>Conclusions of the 2nd International Symposium on Cultural Heritage and Legal Issues - Protection and Reuse of Industrial Heritage: Dilemmas, Problems, Examples.....</b>	<b>142</b>

## Editorial

It gives us a great pleasure to present the second edition of our publication of ICOMOS Slovenia with selected articles they were presented at the 2th International Symposium on Cultural Heritage and Legal Issues, Protection and reuse of industrial heritage: Dilemmas, Problems, Examples, in Bled between the 1st and 3th October 2015.

The Council of Europe's early positions towards industrial heritage were a reaction to the consequences of the industrial decline in western Europe, and the principles were further developed in Recommendations of the Committee of Ministers of the Council of Europe in 1987 and 1990 [R(87)24 and R(90)20]. In 2013, the Parliamentary Assembly of the Council of Europe adopted the Resolution 1924 (2013) on Industrial Heritage in Europe, which draws attention to the most recent issues relevant for the integrated conservation, intelligent rehabilitation and sustainable revitalisation of industrial heritage sites and landscapes of Europe. One should also mention the constant alerts coming from the side of the Congress of Local and Regional Authorities of Europe to strengthen the local authorities' role in the preservation of industrial heritage "in situ". Lately, the initiative about European Industrial and Technical Heritage to be used as one of the central themes of European Heritage Days 2015 was put forward and actually implemented in many European countries. On the other side, ICOMOS Slovenia as an active member of ICOMOS International and ICOMOS Europe has dedicated an important part of its efforts towards international cooperation and pooling forces in the field of industrial heritage protection. Joining forces with the Council of Europe build synergies in following-up the Council of Europe conventions with revisiting these references and taking stock of the new challenges and issues at stake. Our common goal is to integrate innovative ideas, define new positions and open new perspectives with the aim to give this important dimension of our common heritage of Europe the role it deserves in the future multilateral and trans-frontier co-operation.

The present publication brings eleven new articles from different countries, especially focused on south-east Europe industrial heritage, were after the fall of Yugoslavia the new economic order led the collapse of many industrial factories and towns from socialist period and they are now in the process of decline. The nature of economic and political circumstances in south-east Europe are constantly and increasingly challenging the survival of industrial heritage - even "listed" monuments. Public interest is not always sufficiently expressed in decision-making process. The same is true about expectations of heritage communities associated with industrial heritage which still have little means of being expressed and taken on board. There has been an increasing trend of exploitation industrial heritage from which the traditional professional institutions are excluded because they are self-limited to their classical "protection" role instead of developing management approach. The fact is that changes affecting industrial heritage and its role in society require new responses and innovative solutions.

Sonja Ifko, Marko Stokin

## Review

The book 'Protection and reuse of industrial heritage: Dilemmas, problems, examples' raises one of the most significant questions of heritage protection that came into the international public eye at the turn of the 20th and 21st centuries. In this period, many international organisations and bodies involved in heritage management have been engaged in various aspects of industrial heritage. Since UNESCO and Council of Europe are the most prominent international governmental organisations, the publication attempts to put stock in standards developed in the framework of UNESCO World Heritage Programme and Council of Europe's activities and confronts them with efforts of major universal non-governmental organisations, such as ICOMOS and TICCIH. The aim of giving an overview of international standards is itself worthy. The book combines them with a selection of analytical articles about the state of statutory protection, public perception, conservation and reuse by analysing cases from Western and South-Eastern Europe. The state-of-the-art comparison between the situation in both groups of countries shows that the South-Eastern countries lag behind the Western ones in every aspect of industrial heritage protection but the academic historical knowledge, the efforts of museum and conservation service experts and civil society activities, mainly organised at local levels.

The articles collected in the publication offer over 140 pages of intensive reading of well-documented overview of the industrial heritage history in selected countries, discuss problems and to some extent also exemplify good practice. The authors are renowned authorities in the field of industrial heritage research and the topics of their presentations cover well the purpose of the book. There are some discrepancies in technical format of individual articles, one could also come across some translation insufficiencies but such minor imperfections cannot override the prevailing positive impression.

The overall evaluation of the publication could be summed up as follows: it is of great value for readers interested in the issues of industrial heritage and also for heritage experts in general. One could only hope that the message of the book reaches decision makers, as well. The tone of some articles is somehow pessimistic but on the other hand authors share the conviction that education, awareness-raising and international cooperation can make headway in improving the situation.

Dr. Jelka Pirkovič



Water tower in Tovarna dušika Ruše.  
Photo: Miran Kambič, source INDOK Centre, MK RS.

Stephen Hughes

## TICCIH, ICOMOS & The World Heritage

### Summary

*The International Committee for the Conservation of the Industrial Heritage (TICCIH) has some 450 individual members in more than 50 countries. It is a special adviser to ICOMOS on potential industrial world heritage sites. TICCIH produced the Nizhny Tagil Charter on the Industrial Heritage in 2003. In 2011 a shorter text inspired by the Charter was adopted by the 17th ICOMOS General Assembly in Paris as the Joint ICOMOS – TICCIH Dublin Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes. TICCIH has produced four World Heritage Studies in association with ICOMOS and part of the joint action plan being finalised to execute the TICCIH-ICOMOS Memorandum of Understanding, itemises further joint working in this and other areas of the industrial heritage.*

*It may seem logical, as at present being discussed within ICOMOS, to create a new ISC on the Industrial Heritage for effective working on this important topic. However, it would seem counter-productive if ICOMOS does not continue to support the available flow of support and knowledge available from TICCIH for the World Heritage process and for the industrial heritage generally. The new joint TICCIH-ICOMOS Action Plan ensures the continued effective flow of the expert advice on the industrial heritage to ICOMOS.*

### 1 Introduction

The International Committee for the Conservation of the Industrial Heritage (TICCIH) is the world organisation representing industrial heritage and is special adviser to ICOMOS on industrial heritage.

TICCIH has some 450 individual members in more than 50 countries. Thousands more are part of the TICCIH network via affiliation with national societies such as the Association for Industrial Archaeology (AIA) in Britain; the Society for Industrial Archaeology (SIA) in America, and most recently of the Industrial Heritage Committee of the Cultural Relics Academy of China.<sup>1</sup>

TICCIH's goals are to promote international cooperation in preserving, conserving, investigating, documenting, researching, interpreting, and advancing education of industrial heritage. This broad field focuses on the remains of industry – industrial sites, structures and infrastructure, machinery and equipment, housing, settlements, landscapes, products, processes, embedded knowledge and skills, documents and records, as well as the use and treatment of this heritage in the present.

Industrial heritage includes not only the remains of the Industrial Revolution, but also the traditional precursors from earlier centuries that reflect increased technical specialization, intensified productive capacity, and distribution and consumption beyond local markets, hallmarks of the rise of industrialization. It also includes the social and spatial archaeology of workers' & owners' houses, settlements, schools, churches and chapels.<sup>2</sup> Industrial heritage also includes the planning, policy-making and rehabilitation necessary to manage

<sup>1</sup> Martin, P. E. M. (2016). Global Perspectives China 2016. Paper given in Shanghai on November 19, 2016.

<sup>2</sup> Hughes, S. R. (2014). Industrial Chapels. Retrieved from: <http://www.welshchapels.org/welsh-chapels/industrial-chapels/> & Hughes, S. R. (2012). 'The Architecture of Nonconformist Christian Religion and National Identity' in P. Bellamy & G. Montpetit (Ed.), *Religion: Beliefs, Theories and Societal Effects* (New York, Nova), 103 -42.

these remains in the face of deindustrialisation.<sup>3</sup>

This has led to TICCIH being a special adviser to ICOMOS on potential industrial world heritage sites and assisting with the assessment and designation of these sites throughout the world. Although not a scientific committee, TICCIH attends these meetings in an advisory capacity.

TICCIH nominees serve on Panels, review nominations and recommend experts for evaluation missions. While we are an external and independent NGO, we have a strong opportunity to influence policy and practice within ICOMOS and other bodies, especially in the realm of World Heritage. In 1994 TICCIH was represented at the UNESCO Canal Experts in Canada which introduced the use of 'Technical' criteria as valid for the World Heritage. It also added the first industrial heritage annex to the by World Heritage Guidelines with one on the inscription of Canal Historic Transportation Corridors.<sup>4</sup> Its conclusions were confirmed in 2011 another meeting at Wuxi in China at which both TICCIH and ICOMOS had representation.<sup>5</sup>

## 2 History of working with ICOMOS on the World Heritage

The first initiative for creating the only global organisation for the study, interpretation and preservation of our industrial heritage had its origin at a meeting held in 1973 at the Ironbridge Gorge Museum in the United Kingdom. This brought together Industrial Archaeology practitioners, both professionals and amateurs, from all over the world to discuss the preservation of the industrial heritage.<sup>6</sup>



Fig. 1: TICCIH Representative of ICOMOS on World Heritage Evaluation.

3 Hughes, S. R. (2009). Diversity in structure: evidence for globalisation and local interaction in the archaeology, architecture and cultural tourism of industrial communities in Wales. In Paul Bedford, Marilyn Palmer & Roger White (Ed.), *Footprints of Industry: Papers from the 300th anniversary conference at Coalbrookdale, 3-7 June 2009*, BAR British Series 523 (Oxford, 2010), 127-50.

4 Hughes, S. R. (1996). The Industrial Archaeology of Canals. In E. von Baeyer (Ed.), *World Heritage Convention/ Heritage Transportation Canal Corridors/ Proceedings, International Meeting of Experts, 15-9 September, Chafeys Lock, Ontario, Canada*. Ottawa: Parks Canada, Section 4.

5 Hughes, S. R. (2011). Authenticity and Conservation in World Heritage. In ICOMOS China, *Wuxi Forum on the Conservation of China's Cultural Heritage, Conservation of Heritage Canals: Material for Academic Exchanges*. Wuxi: ICOMOS China, 9-13.

6 Smith, S. B. (2012). The work of TICCIH. In J. Douet, *Industrial Heritage Retooled: The TICCIH guide to Industrial Heritage Conservation* (section 31). Lancaster: Carnegie.

Most of the delegates came from Europe, particularly Germany and the UK, together with a few from the United States. One of the most valuable functions of this international membership became quickly established in organising five-day peripatetic meetings. These were held every two-three years in different countries across the world.<sup>7</sup> The first was held in Bochum, Germany, in 1975 and in Sweden two years later saw an increase in the spread and number of delegates including from eastern Europe. It was now a tri-continental organisation with the addition of delegates from Japan.

TICCIH was formally established as an international organisation in 1973. Congresses, or General Assemblies, have since been held more or less every three years since then, in Grenoble, Lowell and Boston in the USA, Vienna and Vordernberg, Brussels, Barcelona-Madrid and Montreal-Ottawa and Athens-Thessalonica. The Millennium Congress was held in London with tours and discussions throughout the UK, meetings were held in Moscow and Ekaterinburg in the Russian Federation in 2003, Terni, in Italy, in 2006, and in Freiberg, Germany in 2009. The 2012 the TICCIH Congress first went to Asia, when it was held in Taiwan. In 2015 the General Assembly returned to Europe with a meeting in Lille and the first Congress in South America will take place in Chile.



Fig. 2: Canals International Experts Meeting Canada 1994.

Two sets of publications arise from these meetings which are arranged around a series of thematic meetings. One is a set of national reports from all the constituent members of TICCIH. A second are the Conference Reports which contain invaluable comparative work from countries around the world. These have just all been digitised and are now one of the resources available through online.<sup>8</sup> Each constituent country of TICCIH has either a National Committee or Correspondent.

TICCIH has special sections which are particularly valuable in developing a comparative knowledge of each significant part of the world's industrial heritage. These include Agriculture and Food Production, Bridges, Communications, Hydroelectricity and

7 Hughes, S. R. (1992). Consideration of the Role of Field Recording and Archaeology in Developing the Historical Understanding of Early Railway Development. In G. Vanderhulst (Ed.), *Industry, Man and Landscape/ Industrie, Homme et Paysage* (TICCIH-Belgium, Brussels), 76-83. Hughes, S. R. (2009). The Comparative Regeneration of the Blaenavon and Pontcysyllte World Heritage Areas. In H. Albrecht, A. Kierdorf, N. Tempel (Ed.), *Industrial Heritage – Ecology & Economy: XIV. International TICCIH Congress 2009 in Freiberg, Germany, Selected Papers – INDUSTRIE archäologie* 10, 54-9. Retrieved from <https://works.bepress.com/the-internationalcommitteeoftheconservationoftheindustrialheritage/>

8 TICCIH General Assembly Proceedings (1972-2015). Retrieved from <https://works.bepress.com/the-internationalcommitteeoftheconservationoftheindustrialheritage/>

Electrochemical industry, Metallurgy, Mining and Collieries, Mints, Polar Region, Railways, Textiles and Tourism.<sup>9</sup> These Sections occasionally organise conferences, and other intermediate conferences are arranged by individual countries or groups of countries.<sup>10</sup>

Four times a year TICCIH publishes a substantial online Bulletin which is published in digital form and emailed to all memberships, the current and many back issues are freely available online.<sup>11</sup> The Bulletin includes papers on topics of interest to members including sites and regions, routes, cultural landscapes, museums, architecture, urban planning, archaeology, theory and preservation advocacy.<sup>12</sup> It also includes conference reports, book and exhibit reviews, research reports and a calendar of events. TICCIH has also published a well-received book on industrial archaeological conservation called *Industrial Archaeology Re-tooled*.<sup>13</sup>



Fig. 3: Conservation of Heritage Canals Meeting China 2011.

TICCIH has had a very long-term relationship with ICOMOS. TICCIH officially affiliated with ICOMOS in 1985. Henry Cleere, of the ICOMOS World Heritage Secretariat, attended TICCIH Board Meetings in the early 1990s to develop TICCIH's role in advancing the industrial World Heritage. A formal agreement was signed between ICOMOS and TICCIH in 2000 at the Millennium Congress in London whereby ICOMOS recognised TICCIH as an Expert Committee on the industrial heritage. This agreement was renewed in 2015. The international industrial journal *Patrimoine de l'Industrie: Industrial Patrimony* was founded and edited by the former TICCIH President Professor Louis Bergeron. Its scientific committee has representatives from both TICCIH and ICOMOS.

The intense co-operation from the 1990s was driven by a realisation that the subject-matter and spread of the World Heritage was far from balanced. To address this need for a Global Strategy was discussed and the influential report *The World Heritage List: Filling the Gaps – an Action Plan for the Future* was published.<sup>14</sup> The publication recognised the

9 Hughes, S. R. (2014). The Evolution of Early Structural Iron in China, Russia and Wales. In *Patrimoine de l'industrie/ Industrial Patrimony*, 31, 2014/1, 77-108

10 Retrieved from <http://ticcih.org/activities/sections/>

11 TICCIH Bulletin (2012-16). Retrieved from <https://issuu.com/ticcih/docs> . TICCIH Bulletin (2016.4). Retrieved from <http://ticcih.org/ticcih-bulletin-74-4th-quarter-2016-published>

12 Hughes S.R. (2016). The Early Steam Engine & Locomotive: a story in global exchange, TICCIH Bulletin 74.4, 6-7.

13 Douet, J. (2012). *Industrial Heritage Retooled: The TICCIH guide to Industrial Heritage Conservation*. Lancaster: Carnegie.

14 Jokilehto, J., Cleere, H., Denyer, S. & Petzet, M. (2005). *The World Heritage List: Filling the Gaps – an Action Plan for the Future: An Analysis by ICOMOS*. Paris: ICOMOS. Retrieved at <http://openarchive.icomos.org/433/1/>

geographic, chronological and thematic biases of the existing World Heritage and set out a programme to rebalance the World Heritage List and to fill the gaps. The Industrial Heritage was identified as one of the areas under-represented and this largely remains the case. By 2015 about 67 of the some 1,000 built World Heritage Sites included a significant element of World Heritage. A programme of World Heritage Studies was instituted to facilitate World Heritage nominations in areas of significant gaps in the List.

### 3 World Heritage Studies

The World Heritage Studies that TICCIH has produced in collaboration with ICOMOS contribute to the implementation of the World Heritage Committee's Global Strategy for a balanced World Heritage List by identifying gaps in the functional, industrial, engineering, commercial and technological areas.<sup>15</sup> The Global Strategy has been in use for twenty-four years so it is an appropriate time for a review of what has been achieved. About half of the twenty studies produced so far as part of this strategy concern the functional and social elements of the industrial heritage.<sup>16</sup> These, and an earlier general industrial archaeological list, have provided the context for the acceptance of almost all industrial archaeological sites nominated by national governments for inscription on the World Heritage List in the current century.

The Global Strategy was adopted by the World Heritage Committee in 1994. Its aim was to ensure that the List reflects the world's cultural and natural diversity of outstanding universal value. Industrial archaeology was felt to be one of the areas under-represented on the List and negotiations at that date between Professor Henry Cleere, World Heritage Co-ordinator of the International Committee for Sites and Monuments (ICOMOS), and Professor Louis Bergeron, then President of the International Committee for the Conservation of Sites and Monuments (TICCIH), resulted in TICCIH being recognised as specialist advisor on the Industrial Heritage to the World Heritage Committee. Ten such Functional and Industrial Archaeology studies have now been prepared for the World Heritage Office (of ICOMOS) and can be found on the ICOMOS web site.

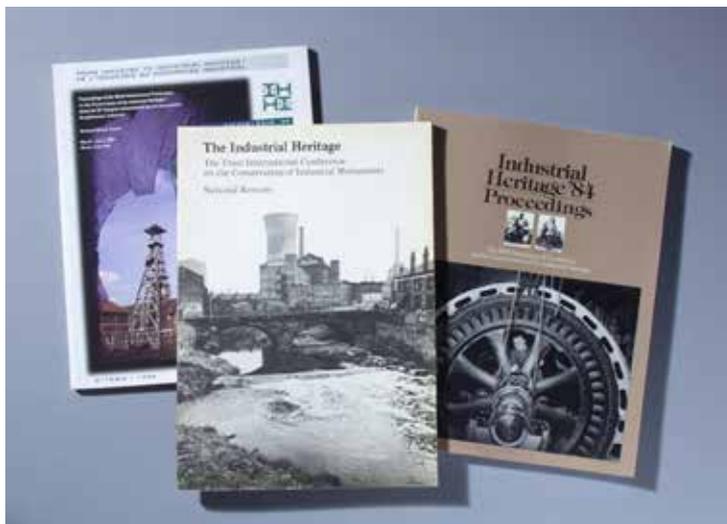


Fig. 4: TICCIH's Congress Proceedings are now online.

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Monuments\_and\_Sites\_12\_Gaps.pdf

15 Hughes, S. R. (2012). Thematic World Heritage studies. In J. Douet, *Industrial Heritage Retooled: The TICCIH guide to Industrial Heritage Conservation* (section 24). Lancaster: Carnegie, 2012.

16 The TICCIH-ICOMOS World Heritage Thematic Studies on Canals, Bridges, Industrial Settlements and Collieries can be retrieved at <http://www.icomos.org/en/what-we-do/disseminating-knowledge/publication/monographic-series/198-thematic-studies-for-the-world-heritage-convention>. All the World Heritage Studies can be found here.

#### 4 International industrial archaeology studies

Pressure from non-European governments to ration the number of European palaces, cathedrals and castles appearing on the World Heritage List helped prompt a search for areas where European developments were truly of international importance.

In 1986, the proposed nomination of the late-eighteenth textile mills at New Lanark in Scotland in the United Kingdom, associated with the social experiments of Robert Owen and David Dale, failed at the first attempt because of a lack of comparative data. There was an ensuing confusion when other European governments considered they had comparable sites concerning early attempts at model social engineering, as with the Guise model worker community at Aisne and also other worker communities such as those at Le Cuesot and Mulhouse

Other nomination attempts failed because of a lack of cognisance of how the World Heritage Criteria would be applied to specific types of industrial monuments, as was the case of Thomas Telford's and Robert Stephenson's technologically pioneering Menai Bridges in Wales, United Kingdom. The States Party had failed to appreciate that both bridges would fail to be selected for World Heritage status on grounds of 'authenticity' as it was the original form of the iron structures that made the structures of primary international importance and in both cases this element of the sites had been replaced. An alternative suggestion was that the Conwy Bridges, retaining these critical features and attached to one side of an existing World Heritage Site, be nominated instead and this was what the TICCIH Board recommended to the World Heritage Committee as part of the first Industrial Monuments List in 1994.

The significance of such international comparative work can be indicated by what happened to the original industrial archaeology study and list. TICCIH organised an International Industrial Landmarks exercise with a request for a list of five sites, or landscapes, from each country. Great Britain, where the first industrial revolution of the modern era started, can be taken as an example of how this process was activated. The Association for Industrial Archaeology (AIA), meeting at Ironbridge in 1993, helped select five examples from each of Scotland, England and Wales which were later refined by national groups within the United Kingdom. From Wales they were Blaenafon Ironworks and Landscape, the international iron-making capital of Merthyr Tydfil, the intact Stephenson and Telford tubular and suspension bridges at Conwy, Dinorwig Slate Quarries and Parys Mountain Opencast Coppermine. In England the sites and landscapes included Cromford Cotton Mills and associated mill communities, Chatterley Whitfield Colliery, Albert Dock at Liverpool, the Cornish tin and copper-mining area around Penwith and Kew Bridge Engines in London. In Scotland the list included the Forth Rail Bridge, Dallas Dhu Whisky Distillery at Forres, New Lanark Cotton Mills, Lady Victoria Colliery at Newtongrange and Biggars Gasworks. Similar exercises were carried out in countries across the world.

The author, as TICCIH National Representative, co-ordinated this work in the United Kingdom and consulted authorities and experts throughout the country in compiling dossiers on each of these sites and sending them to Guido Vanderhulst, then the Secretary for TICCIH Industrial Heritage Landmarks, based in Brussels.

The list of those they considered the most important (that were not already World Heritage Sites) was forwarded to the World Heritage Office of ICOMOS during 1994. At ICOMOS, the work was organised by Professor Henry Cleere, then World Heritage Co-ordinator. At the end of 1994, the list of 33 recommended industrial archaeology sites went forward to the World Heritage Committee.

The Board of TICCIH considered that British sites were of fundamental importance because of their part in the world's first Industrial Revolution with its profound international influence. Therefore no less than nine structures and landscapes that formed part of that process were situated in Great Britain, that is over a quarter of the final number of sites

submitted to the World Heritage Office. These included Blaenafon Ironworks, New Lanark Mills and village, Cromford Mills and associated mills and villages and Albert Dock in Liverpool, all of which were subsequently successfully inscribed on the World Heritage List in the period 2000-2004.



Fig. 5: TICCIH publishes a substantial Bulletin on international industrial heritage issues four times a year.

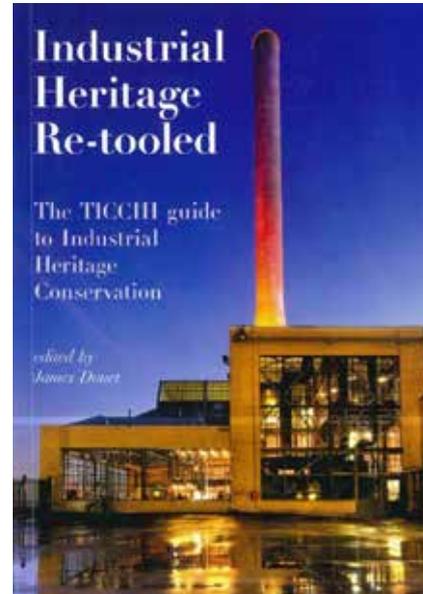


Fig. 6: In 2012 TICCIH published Industrial Heritage Re-tooled.

The Board of TICCIH considered that British sites were of fundamental importance because of their part in the world's first Industrial Revolution with its profound international influence. Therefore no less than nine structures and landscapes that formed part of that process were situated in Great Britain, that is over a quarter of the final number of sites submitted to the World Heritage Office. These included Blaenafon Ironworks, New Lanark Mills and village, Cromford Mills and associated mills and villages and Albert Dock in Liverpool, all of which were subsequently successfully inscribed on the World Heritage List in the period 2000-2004.

Internationally, all subsequent industrial archaeology nominations for the World Heritage List have also been based on inclusion in the framework in the 1994 general list prepared by TICCIH, or the subsequent single-industry lists, with the exception of the British nomination of the Saltaire Woollen Mills and worker settlement.

The international recommendations arising from this first general Industrial Archaeology TICCIH list, outside Britain, included the four nineteenth-century canal lifts on the Canal du Centre and their surroundings (Belgium: 1998); the Verla Groundwood and Board Mill (Finland: 1996); the powered pumping-stations of the Netherlands including the wind-powered installations at Kinderdijk-Elshout (1997) and the Wouda Steam Pumping Station of 1920 at Lemmer in Friesland (the largest steam-powered pumping engine ever built: inscribed 1998); the Zollverein Coal Mine Industrial Complex at Essen in the Ruhr (Germany: 2001) and the Mining Area of the Great Copper Mountain in Falun (Dalarna, Sweden: 2001). The blast-furnaces at Völklingen in the Saarland of Germany were inscribed at the same time as the TICCIH Board completed the list with the furnaces on it.

In all, one third of the 33 sites and landscapes on the 1994 TICCIH list of outstanding industrial monuments have subsequently been inscribed as World Heritage sites. Nine on that list were in the United Kingdom, eight in Germany, three each in Belgium and the Netherlands, two each in France, Sweden and Denmark and one each in Japan, Russia and

Finland. Internationally, the sites and landscapes yet to be inscribed from Germany include the Potash Mines at Bleicherode, Thuringia; the AEG Turbinehall in Berlin; the sugar refinery at Oldisleben, Thüringen; the warehousing in Hamburg Harbour; the Göltzschal Railway Viaduct at Mylau in Saxony and the Freiberg Brassworks Mining and Cultural Landscape, Halsbrücke.

In Belgium, the early nineteenth-century coalmining town and mine of Bois du Luc in Wallonia, the Noeveren Brickworks industrial landscape at Boom and the Tour et Taxis goods interchange station in Brussels were noted as being of importance in 1994. In Holland, the multiple Cornish beam-engines of the Cruquius Steam-powered Pumping Station were commended along with the other two sites and drainage landscapes that have since achieved recognition as World Heritage Sites. A second site commended from Sweden was the Dannemora Iron-ore Mines and Settlement in Uppland as were the enlightened socialist settlement of the Guise factory at Aisne in Picardy and the Menier Chocolate Factory at Noisel, in France. In Denmark, the Nivaagaard Brickworks at Niva in north Copenhagen and the Carlsberg Breweries in Copenhagen were also noted for their international importance. Finally, but not least, the Nizhny-Tagil Museum Steelworks in the Sverlovsk Province of the middle Urals of the Russia Federation was recognised for the fact that it was one of Peter the Great's early eighteenth-century multi-blast furnace ironworks with developed workers' settlements attached.

The 1994 General Industrial Archaeology list has underpinned the formation of the 'Tentative Lists' of proposed World Heritage Sites formulated by each national government. This has been especially true in Europe where the World Heritage Office has advised States Parties that this is the area that the rest of the world perceives as being of profound importance in world history.

## **5 TICCIH/ICOMOS comparative thematic studies**

There is a natural tendency for all governments and nations to think that their own monuments are the best in the world but it is equally difficult to achieve a balanced objective assessment of the relative merits of various candidates that is acceptable to all parts of the international community. The 1994 general list of industrial monuments was felt to be too broad in its scope and so in 1996 TICCIH coordinated the first of a series of single-industry comparative thematic studies in which criteria were developed so informed comparisons could be drawn between widely-dispersed sites from around the world.

The thematic studies are usually arranged in two sections, first an assessment of the criteria that are deemed to be most relevant to the subject area under study, followed by a list of some of the most significant monuments and landscapes of the studied type that the criteria can be applied to. The first section has latterly been considered to be the more relevant by the World Heritage Centre of ICOMOS.

The first of the World Heritage Studies, The International Canal Monuments List, was prepared by the author in 1996 after a UNESCO Canal Experts Meeting hosted by Parks Canada.<sup>17</sup> It was more prescriptive than later studies in giving a very long list of categories of structures and canal lines related to waterway construction and use that could be nominated for World Heritage Status. This first World Heritage Study used widespread international consultation to assess which of the canal monuments might be the most important and so to be most worthy of World Heritage Status. However, national governments, the States Parties, determine which sites and landscapes should actually be put forward for nomination.

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<sup>17</sup> Hughes S.R. (1996) (ed.). The International Canal Monuments List, The International Committee for the Conservation of the Industrial Heritage/The International Council on Monuments & Sites, Paris. Retrieved from <http://www.icomos.org/en/what-we-do/disseminating-knowledge/publicationall/monographic-series/116-english-categories/resources/publications/235-international-canal-monuments-list>

Subsequent thematic World Heritage Studies have not had international experts scoring sectional lists of possible prospective World Heritage sites. Instead, the sectional establishment of criteria is followed by a section of nine significant examples of the criteria applied to prominent sites and landscapes drawn from within the theme being covered. These examples are not prescriptive and the criteria established can equally be applied to other outstanding sites from across the world nominated by the national States Parties. It is important, and indeed expected by the World Heritage Centres of ICOMOS and UNESCO, that examples of the sectional criteria are applied to sites spread across the world and not confined to any one continent.

Formal nomination documents such as those for Blaenavon and the Derwent Mills have cited the 1994 general studies, and the subsequent single-industry studies, as contextual information to ensure that their nominations were accepted by the international community.

The studies concerned with functional archaeology and industrial archaeology are The International Canal Monuments List (1996); Context for World Heritage Bridges (1997); Railways as World Heritage Sites (1999); Les villages ouvriers comme éléments du patrimoine de l'industrie (Workers settlements as part of the industrial heritage - 2001); The International Collieries Study (2003), Les paysages culturels viticoles (Wine-growing Cultural Landscapes - 2004) and most recently a study of Heritage Sites of Astronomy and Archaeoastronomy in the context of the UNESCO World Heritage Convention (by ICOMOS and IAU, 2010).<sup>18</sup> Sometimes governments have made almost immediate use of these studies to achieve the inscription of monuments, as did France and Belgium with the Canal du Midi and Canal du Centre, Germany with Zollverein Colliery and Hungary with vineyards.<sup>19</sup>

## **6 Future work and methodology**

The methodology for carrying out the TICCIH/ICOMOS thematic World Heritage studies has now become well established. Those preparing national nominations within the field of industrial archaeology in countries as diverse as China, Canada, France and Britain have acknowledged how useful these studies have become in providing guidance that rises above inevitable national perceptions in helping establish relevant elements of Outstanding Universal Value and in writing the significant International Comparative Significance sections of nomination documents.<sup>20</sup> Equally, the assessors of the ICOMOS and UNESCO World Heritage Centres, and the field and desk mission experts evaluating nominations, expect those preparing World Heritage Site Nominations to have referred to the relevant thematic World Heritage Studies and for the estimation of Outstanding Universal Value (OUV), and the assessment of Significance in the International Comparison section, to be linked to it.

## **7 Staged programme for the resumption of ICOMOS-TICCIH world heritage studies on the industrial & technical heritage in 2016**

The ICOMOS Global Strategy & the Filling the Gaps Study identified the Industrial Heritage as being under-represented on the World Heritage List.

The TICCIH Board has agreed to resume a structured programme of ICOMOS-TICCIH World

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18 Hughes S.R. (2003). The International Collieries Study, The International Committee for the Conservation of the Industrial Heritage/The International Council on Monuments & Sites, Barcelona/Paris. Retrieved from <http://www.icomos.org/en/what-we-do/disseminating-knowledge/publicationall/monographic-series/116-english-categories/resources/publications/226-the-international-collieries-study>

19 Hughes, S. R. (2004). The International Collieries Study: Part of the Global Strategy for a Balanced World Heritage. *Industrial Archaeology Review*, November 2004, Volume XXVI, Number 2, 95-111.

20 Hughes, S. R. (2007). The International Canal Monuments Study: part of the Global Strategy for a balanced World Heritage List. *Patrimoine de l'Industrie: Industrial Patrimony*, 2007, Volume 18, 19-32.

Heritage Studies and its Secretary, Stephen Hughes, and the TICCIH Editor James Douet, have been charged with developing a detailed programme in collaboration with ICOMOS.

Between 1996 and 2004 four industrial World Heritage Studies were produced by TICCIH in co-operation with ICOMOS: on Canals, Bridges, Industrial Settlements and Collieries and, according to international feedback these have considerably facilitated inscriptions in those categories.

Feedback from the UNESCO Technical & Scientific Experts Meeting in London was that TICCIH could helpfully produce a comprehensive set of studies covering the industrial and technical World Heritage.

During the ongoing UNESCO Twentieth-century Experts Meeting in Los Angeles the chair Sheridan Burke asked if TICCIH could produce a set of studies to contribute to a further assessment of the Twentieth-century Heritage. Ron Van Oers, the UNESCO representative at that meeting, stated that he was convinced of the worth of the ICOMOS-TICCIH World Heritage Studies and the value of such a course of action. TICCIH has representatives in some 50 countries across all continents and it will use this network, and its substantial number of expert Special Interest Sections, to ensure a wider consultation and input into these Studies.

These special thematic reports, the first by TICCIH have been used by ICOMOS when assessing potential new world heritage sites and include the TICCIH World Heritage Studies on Canals, Bridges, Industrial Settlements and Collieries. There is a great potential for expanding these specialised reports as one of the main benefits that TICCIH brings to any individual or country working in a specific field is the objectivity of an international approach. TICCIH has affiliations with other international bodies as well as with ICOMOS, and held a joint conference with the International Committee for the History of Technology (ICOHTEC) in 2010. It is also working with the modern Asian Architecture Network (mAAN) which in 2011 held a conference in South Korea. Although TICCIH endeavours to work largely with international bodies, it actively supports cross-border projects such as the European Route of Industrial Heritage (ERIH).<sup>21</sup>

This work came to fruition in 2015 when no less than 8 additions to the World Heritage List representing the functional, agro-industrial, and industrial heritage were added:

- Champagne Hillsides (France)
- Climats, Terroirs of Burgundy (France)
- Speicherstadt and Kontorhaus District (Germany)
- Sites of Meiji Industrial Revolution (Japan)
- Aqueduct of Padre Tembleque Hydraulic System (Mexico)
- Rjukan-Notodden Industrial Heritage Site (Norway)
- Forth Railway Bridge (United Kingdom)
- Fray Bentos Industrial Landscape (Uruguay)

The first two of these were added as a result of the contextual evaluation on the specifics for the Outstanding Universal Value (OUV) of this area of study produced in one of the twenty World Heritage Studies now available. The context for the nomination of the Forth Railway Bridge was facilitated by the World Heritage Studies on both Bridges and Railways.

Documents have already been prepared within TICCIH analysing the full-range of sectional studies required for the Industrial Heritage sector. From that, and an awareness of where international work is on-going the following studies are likely to be proposed as part of an initial two-year programme.

**I. The Hydro-electric Industry:** this would contribute substantially to the Twentieth-century study and a series of international meetings and consultations are already way as part of the

21 Martin, P. E. M. (2017). Global Perspectives China 2016. Powerpoint given at a Chinese Seminar.

TICCIH Hydro-electric Special Interest Group's Study;

**II. The Textile Industry:** one of the main industries of the eighteenth & nineteenth-century industrial revolution. A draft World Heritage Study has already been prepared as a result of successive international meetings of the TICCIH Special Interest Section on Textiles and this study is due to be finalised during a further international meeting in 2013;

**III. The Copper Smelting Industry:** another key industry of the Industrial Revolution. It has been possible to obtain funding from the Leverhulme Trust for a series of international meetings across three continents and a draft study will be further refined by consultation with further experts in TICCIH;

**IV. The Iron & Steel Smelting Industry:** one of the two most central industries of the Industrial Revolution. Some initial funding is likely to be available from the Ruhr in Germany and a wider consultation within TICCIH will take place.

**V. The Copper-mining Industry:** An initial study will cover this large-scale industry from the Bronze-Age and Medieval periods and into the early twentieth-century.

**VI. The International Slate & Building-stone industry:** Two initial international conferences have taken place with representatives of the world's three largest national producers and further study was approved by the TICCIH Mines section.

**VII. The Water-supply Industry:** An industry critical to nineteenth and twentieth-century industrialisation and where an international study is beginning.

This is an initial series of resumed studies. Two-three of these can be finalised by TICCIH and passed to ICOMOS in 2016. Obviously work will initially concentrate where there is funding available for international consultation using the TICCIH and other networks. Further progress on a fully comprehensive set of studies will be at least partly dependent on the availability of further funding.

## **8 Nizhny Tagil Charter for the Industrial Heritage (2003)**

At the Russia congress in 2003, TICCIH president Eusebi Casanelles signed the Nizhny Tagil Charter for the Industrial Heritage with the congress host, Eugene Logonov, and after numerous deliberations this approach was confirmed by ICOMOS in 2011 as the ICOMOS-TICCIH Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes. TICCIH hopes these principles will be widely accepted by national governments. The text of this charter was passed by the assembled delegates at the triennial National Assembly of TICCIH held in Moscow on 17 July, 2003.<sup>22</sup>

## **9 Introduction**

It was apparent that there was a degree of confusion surrounding the concept of the Industrial Heritage. Some of those interested in industrial heritage had arrived through trying to save a particular local factory, steam engine, mine or whatever. But they had no clear references or theoretical 'corpus' on which to base the defence of these physical remains, to which mainstream society, especially those with the power to determine the policies governing the cultural heritage, attributed little value.

The big problem for the industrial heritage was, and partly still is, the absence of an academic discipline to provide the theoretical foundation which would locate it within the cultural field. Without this support it was considered a lesser heritage. This was abnormal in that all the other specialized areas such as archaeology, art history or ethnology had  
22 TICCIH (2003). The Nizhny Tagil Charter. Retrieved from <http://ticcih.org/about/charter/>

their corresponding university departments. Nor were the architecture professionals very appreciative, a collective occupying key positions in the heritage administration, because industrial buildings for them presented no singularity, constructive, aesthetic or structural. In this situation the priority was to raise popular awareness, especially among those involved with cultural heritage.

## 10 Raising awareness

There was a need for a simple text which laid out the fundamental values and importance of industrial heritage as a part of our cultural resources.<sup>23</sup> The main purpose of this text was to become an instrument for the advocates of industrial heritage while at the same time influencing those with the power to decide issues of cultural policy. This text had to be prepared by TICCIH, already a well-respected international organisation. The fact that TICCIH had members from the countries with the most cultural influence in the world, with many well-known professionals and university academics, helped greatly to accomplish an evangelical task. Those people who had worked in TICCIH since the late 1970s had already done a great job. The name of TICCIH was already used by individuals and groups fighting to preserve a historic site of industry, to contradict those who claimed it had no cultural value, or worse, just a nostalgic obsession for forgotten ways of working.



Fig. 8: TICCIH's Nizhny Tagil Charter for the Industrial Heritage 2003.

## 11 International doctrinal texts

The relationship between TICCIH and ICOMOS has highlighted the importance of charters and international standard texts and informed the type of document TICCIH needed for industrial archaeology. The big over-arching agreements are of course the 1964 Venice Charter for the Conservation and Restoration of Monuments and Sites and the 1994 Nara Convention on Authenticity. Some agreements defined and promoted a specific aspect of cultural heritage such as the Florence Charter of Historic Gardens (1982), the Washington

<sup>23</sup> Casanelles, E. (2012). TICCIH's charter for industrial heritage. In J. Douet, *Industrial Heritage Retooled: The TICCIH guide to Industrial Heritage Conservation* (section 32), Lancaster: Carnegie, 2012.

Charter on the Conservation of Historic Towns and Urban Areas (1987), and UNESCO's Convention on the Protection of the Underwater Cultural Heritage (2001). Others are more generic such as the Charter for the Protection and Management of the Archaeological Heritage (1990) and the Charter for the Built Vernacular Heritage (1999).

There were charters about specific themes. However, the industrial heritage needed a specific charter clarifying the core values of the field and laying out the best means of conserving the evidence. James Douet, editor of the TICCIH Bulletin and based in Barcelona, made the comparisons with ICOMOS charters and drafted the new industrial heritage charter.

## **12 Drafting the Nizhny Tagil Charter on the Industrial Heritage (2003)<sup>24</sup>**

There is no complete consensus on the definition of the time frame for the industrial heritage. The majority, especially outside Europe, believe that the term industrial heritage encompasses all the physical remains from the world of production throughout the history of humanity. Many members of TICCIH believe that industrialisation had roots in prehistory and that the social and spatial archaeology & architecture of industrial settlements is an indivisible part of the study.<sup>25</sup> By the time the TICCIH Charter was drafted it was already the twenty-first century and technological change was so fast that production systems became obsolete very quickly.

To the definition of industrial heritage was added the further detail that it was composed specifically of remains with values from a variety of fields so as to highlight the interdisciplinary character, widening the scope of industrial heritage from productive sites to include 'warehouses and stores, places where energy is generated, transmitted and used, transport and all its infrastructure, as well as places used for social activities related to industry such as housing, education or religious worship'.<sup>26</sup>

The Nizhny Tagil Charter tried to underline that the dominant value of the industrial heritage is as testimony to social and economic changes generated by the introduction of new production processes that changed and continue to change humanity's forms of living and working. This incorporates the values of ethnological heritage, even if the industrial heritage gives much more importance to technology and production methods as the protagonists of the great transformation of society worldwide, while traditional ethnology treats these as the material goods of a particular society.

TICCIH's charter also wanted to underline the documentary value of industrial heritage, whose study provides data on the ways of life and working customs of ordinary men and women. This was to emphasise these values alongside the more obvious intrinsic ones such as its rarity, age or aesthetic quality.

The separation of these two types of values, the testimonial and the intrinsic, was because failing to appreciate the evidential value of industrial heritage is one of the main reasons it is poorly understood in the wider cultural and political world. Cultural heritage managers habitually evaluate the built heritage on the basis of intrinsic structural but above all aesthetic qualities. Industrial heritage frequently lacks these characteristics. Its buildings are often not aesthetically fine, its structures can be commonplace or poor. Many are not especially old nor have they witnessed the great moments or personalities of national history.

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24 TICCIH (2003). The Nizhny Tagil Charter. Retrieved from <http://ticcih.org/about/charter/>

25 Hughes, S. R. (2004). Social Archaeology: A Possible Methodology of the Study of Workers' Settlements based on the 18th- and 19th-Century Copper Industry of Swansea. In D. Barker & D. Cranstone (Ed.), *The Archaeology of Industrialization* (Leeds, Maney, 2004), 137-54.

26 Hughes, S. R. (2011). Attitudes to Religion, Education, and Status in Worker Settlements: The Architectural and Archaeological Evidence from Wales. In M.C. Beaudry & J. Symon *Interpreting the Early Modern World: Transatlantic Perspectives* (New York, Springer, 2011), 197-228.

The sections of the Nizhny Tagil Charter directed to the administration of the industrial heritage stressed the importance of inventories, and that they should include all the available historical sources, from the textual or graphic to the personal memories of people who worked or lived there. While oral history may be subjective and not very reliable for historians, it is invaluable for understanding the world of work and everyday life.

On the other hand, the Nizhny Tagil Charter recognises that not all the remains of industry have to be protected and conserved, only those whose significance has been demonstrated according to generally accepted criteria. Authenticity and integrity on industrial sites can be severely harmed by the mere act of removing plant and machinery. Moreover, authenticity in industrial sites, is not always easy to determine for places which have been adapted to new technologies and different uses during their working lives. The original form or the final condition are both valid criteria?

The principle of authenticity is more conceptual, that of integrity presents major practical problems for conservators and restorers. In many cases the extent of an industrial site brings it into conflict with the constructional interests of owners and planners. A consensus is often reached to preserve only part of a site as evidence of the former productive activity. The problem is accentuated when the evidence for an industrial landscape or neighbourhood is involved, and in these cases the decision is often taken to preserve fragments or isolated elements from different industrial buildings.<sup>27</sup>

The final theme to emphasise and which recurs throughout the charter is international collaboration. This has a special relevance for industrial heritage due to the transfers of technology, capital, knowledge and population which have accompanied industrialisation. TICCIH is the major organisation focussed on collaboration in the field of industrial heritage and its potential should be developed rather than in any way duplicated.

The Nizhny Tagil Charter was finalised in 2003. It was named after the great iron and steel-producing city in the Urals where the meeting was held, Nizhny Tagil.

In 2011 a shorter text inspired by the Charter was adopted by the 17th ICOMOS General Assembly in Paris as the Joint ICOMOS – TICCIH Dublin Principles for the Conservation of Industrial Heritage Sites, Structures, Areas and Landscapes, sometimes referred to as ‘The Dublin Principles’. The Charter does have some strengths such as the recognition of Social Archaeology which are not especially emphasised in the Dublin Principles.

### **13 TICCIH - ICOMOS Joint Dublin Principles for the Industrial Heritage – 2011 – a summary<sup>28</sup>**

#### **13.1 Documenting & Understanding of the Industrial Heritage**

Researching and documenting industrial structures. Relates to sites, landscapes and the related machinery, equipment, records or intangible aspects is essential to their identification, conservation, and the appreciation of their heritage significance and value. Human skills and knowledge involved in old industrial processes are a critically important resource in conservation and must be considered in the heritage evaluation process.

#### **13.2 Protection & Conservation**

**Legal & Administrative Policies.** Appropriate policies, legal and administrative measures need to be adopted and adequately implemented to protect and ensure the conservation

<sup>27</sup> Ibid. Much of this section on the Nizhny Tagil Charter is drawn from Casanelles, E. (2012). TICCIH's charter for industrial heritage. In J. Douet, *Industrial Heritage Retooled: The TICCIH guide to Industrial Heritage Conservation* (section 32), Lancaster: Carnegie, 2012.

<sup>28</sup> The TICCIH-ICOMOS Dublin Principles can be retrieved at <http://ticcih.org/about/about-ticcih/dublin-principles/>

of industrial heritage sites and structures, including their machinery and records. These measures have to address the close relation between the industrial heritage, industrial



**Fig. 9:** The TICCIH-ICOMOS Dublin Principles for the Conservation of the Industrial Heritage 2011.



**Fig. 10:** TICCIH has an Advocacy Programme for International Industrial Sites in danger.

production and the economy, in particular with respect to rules for corporations and investments, trades or intellectual property such as patents, and standards applicable to active industrial operations.

### 13.3 Conserve & Maintain the Industrial Heritage

Appropriate original or alternative and adaptive use is the most frequent way and often the most sustainable way of ensuring the conservation of industrial heritage sites or structures. New uses should respect significant material, components and patterns of circulation and activity. Specialist skills are necessary to ensure that the heritage significance is taken into account and respected in managing the sustainable use of these industrial heritage sites and structures.

### 13.4 Presentation & Communication of Industrial Heritage Values

The industrial heritage is a source of learning which needs to be communicated in its multidimensions. It illustrates important aspects of local, national and international history and interactions over times and cultures. It demonstrates the inventive talents related to scientific and technological developments, as well as social and artistic movements. Public and corporate awareness and understanding for the industrial heritage are important means for its successful conservation

## 14 Advocacy for significant sites

TICCIH is increasingly asked to support preservation attempts in countries throughout the world and this role of advocacy is formalised so that TICCIH can continue to provide informed and international advice to people who feel that their industrial heritage is under threat. Recent casework has included Rheinfelden/Odda, Pawtucket (now down to a lawsuit between federal agencies), Cornish heritage and mining in World Heritage Areas, Falun

Opencast mine and Stockholm Gasholder 4.<sup>29</sup>

## **15 TICCIH - ICOMOS Communications Development as proposed in the draft action plan for 2016-17**

### **15.1 TICCIH Communications with ICOMOS Scientific Council & ICOMOS International Scientific Committees**

TICCIH to provide a representative at meetings of the ICOMOS Scientific Council. ICOMOS Board 01.11.2016. The ICOMOS Scientific Council has been reformed: Only 3 elected officers & the ISCs can make decisions. A member of TICCIH could attend as an observer.

TICCIH to undertake a survey of its members to see who sits on ICOMOS International & National Scientific Committees and to fill gaps in representation in appropriate international committees.

### **15.2 Information dissemination at appropriate events**

TICCIH & ICOMOS dissemination of information at appropriate events. The TICCIH Board will work to enable a senior member of ICOMOS to provide a keynote presentation at the next TICCIH General Assembly. TICCIH will continue to provide speakers when asked to give presentations at ICOMOS national conferences & specialist international expert meetings.

Agreed by the ICOMOS Board 01.11.2016 with small changes.

### **15.3 Reciprocal representation in governing bodies namely TICCIH Board & ICOMOS General Assembly**

TICCIH will continue to send representatives to the ICOMOS General Assembly who will carry-on presenting papers of relevance to both organizations. ICOMOS will be asked to formalize representation on the TICCIH Board. TICCIH is prepared to name a member of its Board, also active in ICOMOS, who will be responsible for formal liaison.

The ICOMOS Board 01.11.2016 felt it best for a liaison person to be formally appointed on each side.

## **16 Co-operation in research & development of improved approaches to the World Heritage Convention**

### **16.1 Continue Thematic Studies consistent with 'Filling the Gaps in the World Heritage List'**

Given above is a strategic overview on how 'Filling the Gaps on the Industrial Heritage World Heritage List' can be taken forward in a staged annual program using the appropriate expertise available through TICCIH and appropriate partnerships.

Agreed by ICOMOS Board 01.11.2016.

### **16.2 Identify Experts for Desk Reviews & Missions with potentially significant industrial heritage**

TICCIH will continue to provide lists & contact details of experts appropriate to the World Heritage Nominations submitted when given an adequate time to consult the expert members available.

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<sup>29</sup> Martin, P. E. M. (2016). Global Perspectives China 2016. Paper given in Shanghai.

Agreed by ICOMOS Board 01.11.2016.

16.3 Parties will co-operate on the development of theory & conservation principles in industrial heritage as defined in the Dublin Principles

Both parties are participating in the development of a twentieth-century heritage framework co-ordinated by the Getty Institute to which the Dublin Policies will be applied. New theoretical ideas publicized in the TICCIH Bulletin will be developed by further co-operative action by TICCIH & ICOMOS national sections.  
Agreed by ICOMOS Board with small changes, 01.11.2016.

## 17 Conclusion

TICCIH has been firmly established in Europe and North America for many years, but increasingly countries in South America as well as Mexico and Australia, have become active members of TICCIH. The Board of TICCIH now represents every Continent, Africa, Australia, Asia, Europe and America.

TICCIH is proud of the fact that it attracts large numbers of young people to its general conferences, almost equally divided between male and female, which also reflects its general membership and Board. For an academic organisation, this is quite outstanding and every effort needs to be made to increase the number of young female members of the Board to reflect the general makeup of society.

The collapse of the Soviet Union in the 1990s led to a spectacular growth in industrial preservation and interest in Hungary, Poland, Romania, Russia and the Czech Republic. Many of these countries are now coming to terms with their post-colonial experience, and are faced with the problems of what to preserve. Similarly, there has been a huge increase in interest in the work of industrial preservation in Asia, in particular in India, China including Taiwan, Japan, the Philippines and Korea.

What have been the main achievements of TICCIH and what are its new challenges?<sup>30</sup> Probably its greatest achievement is that it has survived all this time as a voluntary organisation with no funding from government or international organisations such as UNESCO. Interest in industrial preservation and interpretation has spread to almost every country in the world, with university courses, postgraduate training programmes, and even acceptance by conventional archaeologists.<sup>31</sup>

TICCIH engaged with the UNESCO/ICOMOS initiative to produce criteria to enable the inscription of the under-represented areas of the twentieth-century heritage. Further studies on the textile industry, as well as largely twentieth-century technological studies such as automobile production, hydro-electrical power-stations, power-stations generally, water-supply and other utilities, telecommunications, steel and concrete multi-storey constructions and motorways, should be prioritised. TICCIH, in consultation with the ICOMOS World Heritage Office, needs to refine the facilitating structures already established into a coherent programme that can be advanced harnessing the considerable resources established by its international networks.

It may seem logical, as at present being discussed within ICOMOS, to create a new ISC on the Industrial Heritage for effective working on this important topic. However. It would seem counter-productive if it does not continue to support the available flow of support and knowledge available from TICCIH for the World Heritage process.

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30 Hughes, S. R. (2013). Industrial Archaeology: past & future, Patrimoine de l'industrie/ Industrial Patrimony, No. 30.I, 2013, 1-25.

31 Martin, P. E. M. (2016). Global Perspectives China 2016. Paper given in Shanghai.