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Too Much Modernity or Too Little? Efforts Towards a Global Discard Policy at the International Reference Centre for Wastes Disposal, 1966–1976

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ABSTRACT

This paper examines the early development of international waste governance from 1966 to 1976. As industrialised nations generated more waste due to urbanisation and changing consumption, international organisations faced pressure to respond. The World Health Organization led efforts by creating the International Reference Centre for Wastes Disposal (IRCWD) in collaboration with the Swiss Federal Institute for Water Supply, Sewage Purification and Water Pollution Control (EAWAG) and the International Association for Public Cleansing (INTAPUC). The IRCWD aimed to centralise global waste management knowledge and coordination. However, institutional fragmentation, funding issues and differing views on whether waste was a technical or systemic issue hindered its success. While some saw waste as a symptom of flawed modernisation, most treated it as a technical problem requiring improved disposal methods. Competition from other organisations, WHO ambivalence, and reluctance to challenge economic systems weakened momentum. Ultimately, waste became a shared concern but was addressed in fragmented ways. The study shows how institutional and political factors, rather than environmental priorities, shaped early international waste policy.

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1. INTRODUCTION

In the late 1960s, international organisations (IOs) began adopting waste into their work programmes on a large scale. Institutionalised international co-operation on waste-related questions had already begun early in the twentieth century, and after approximately 1965 the topic received substantial attention by numerous IOs. This was because of developments relating both to international organisations and to waste in general.

Waste is not an objective category. It requires context. Generally speaking, waste is anything that gets discarded. But that is a fuzzy definition. What some people want to get rid of, others may find valuable: organic material is waste when flushed down the toilet but is fertiliser when placed on a field; discarded jeans are waste when piled on a landfill, but regular merchandise in a second-hand store, or valuable fibre in a shop making bags from recycled materials. This contingent nature of waste has been captured by a frequently cited definition as ‘matter out of place’, usually credited to Mary Douglas ([Douglas 1966](#)) though the phrase was already in use in the late nineteenth century ([Gerhard, 1890: 20](#)). However, while the nature of waste may not be an objective reality, the growing quantity of discarded material is. Urban solid waste is estimated to have increased ten-fold from 300,000 tons per day in 1900 to 3 million tons every day in the year 2000 ([Hoornweg et al. 2013](#)). According to another study, ‘Humanity has deposited 2500 Gt of wastes and emissions to the environment since 1900 ... 28% of all outflows of wastes and emissions since 1900 occurred between 2002 and 2015’ ([Krausmann et al. 2018: 131](#)).

At a simple level, the quantity of waste is a function of how many people exist, who can throw things away, and how many things *per capita* they discard. In that sense, a five-fold increase in world population and a 25-fold increase in GDP over the twentieth century inevitably resulted in an immense increase in people who discarded, and the production of discardable things ([Roser et al. 2013](#)). Some relation between waste and GDP is undeniable, though it is more complex than a simple positive correlation. According to conventional wisdom, ‘historically there has been a positive relationship between waste generation and income *per capita*’ ([Kaza and Chaudhary 2021](#)). Indeed, high-income countries tend to generate more waste than poor countries. According to a seminal World Bank study, high-income countries – home to only 16 per cent of the global population – generated 34 per cent of waste in 2018 ([Kaza et al. 2018](#)). However, belying a simple parallel, developments in GDP and garbage have not necessarily been synchronous over time, as GDP growth sometimes outstripped waste production or *vice versa* ([Powell 2002: 27–29; Köster 2017](#)). Similarly, recent OECD statistics have

indicated only a relatively weak correlation between *per capita* GDP and waste production, while the relative importance of high-waste industries such as the construction and mining sectors is highly significant ([OECD 2019](#)). Other relevant factors include changing ways of production, trade, consumption and disposal. Household waste has been particularly affected by the rise in supermarket purchasing, packaging and single-use items as well as changes in heating systems and overall urbanisation ([Köster 2016 and 2024](#)). In addition, local and national power relations have played a role in shaping waste developments, allowing or incentivising some forms while suppressing others ([Liboiron and Lepawsky 2022](#)).

Overall, social, economic and technological transformations in industrialising countries changed not only the quantities of materials used in production and consumption, but also the scale at which items were considered no longer usable, useful or desirable. Such changing judgments arose because of changes either in the things themselves (which might break faster or be less easily repaired than in earlier times), or in the contexts in which they existed (faster technological improvements creating better things; changing fashions, habits, and preferences; or other reasons to make things appear unattractive). At some point, the increasing amount of matter thrown ‘away’, i.e. left somewhere in the environment in some shape or form, raised concerns among communities and authorities. Early on, there was broad consensus that the ever-rising quantities of waste were problematic, but interpretations differed on what exactly it was that caused problems: was it a problem of mismanaged disposal, which led to too much material littering the environment? Or was it a problem of mismanaged economic production and consumption, which led to an overabundance of things that eventually needed disposal? These questions had practical as well as theoretical and ideological repercussions. The first framed waste as a technical and/or management problem, to be solved by using the tools of modernisation and industrialisation. The second approach framed waste as a consequence of these very processes, so that a solution required systemic changes in the ways societies understood and implemented modernisation. One approach would accept waste as an inevitable part of economic activities and would focus on disposal, the other would see waste as potentially preventable and would focus on planning and design. To some extent, these differences could be glossed over in discussions of strategy. But the question of whether waste is the result of insufficient modernisation or of too much (or the wrong kind of) modernisation implicitly formed part of all discussions on this topic and has continued to do so. Inevitably, tensions between these approaches also affected discussions at IOs, when they became engaged in this topic.

IOs could hardly avoid waste as a relevant issue. Alongside an increase in waste, the twentieth century also saw a growth in the number and responsibilities of IOs. For decades, IOs have proliferated to the point that they now outnumber states, and they are profoundly embedded in virtually all topics of everyday activity ([Klabbers 2022](#): 1; [Katz Cogan et al. 2016](#): v). To varying degrees, they have an impact on all of these by setting agendas, initiating new ideas, providing authoritative knowledge, facilitating cooperation, implementing international programmes and projects, and generally contributing to global governance ([Gutner 2024](#): ix; [Reinalda 2009](#): 16). In doing so, IOs are neither homogeneous nor fully autonomous actors. They develop their positions and corporate identities within a web of member states, other IOs and evolving public opinion and scientific knowledge ([Nielson and Tierney 2023](#): 241–276).

Making use of archival material from several IOs, this paper looks at a crucial period between 1966 and 1976 when waste evolved from a fringe topic to a central concern. This was the period when, by consideration or by default, IOs had to make important decisions on what constituted the problem created by visibly growing quantities of waste; how to frame it; and, consequently, what to propose as appropriate strategies to address it. The focus is on the *International Reference Centre*, a short-lived effort established by the WHO to create a central institution in charge of waste as a phenomenon *sui generis*. In order to elucidate the reasons for this initiative and its ultimate failure, the paper contextualises it within a broader frame of evolving IO programs, in which every institution moved within an increasingly crowded field of IO activities, each reflecting their own agendas and institutional niches. The paper argues that opportunities for the endorsement of waste as a manifestation of misguided systemic policies were real but patchy and weak. The establishment of a central institution committed to a concept of waste as a reflection of overriding global developmental challenges rather than as a generic term for a broad field of largely unrelated materials would have required strong determination and support. But such support was limited because virtually all IOs were in some way committed to the existing economic system of increasing production and consumption, and because the fragmentation of IOs – each with their own competing experience with waste – made such a centralised response very difficult.

2. BEGINNINGS: FROM THE INTERWAR YEARS TO 1966

International cooperation in the waste sector began not in an intergovernmental organisation but with meetings of practitioners: representatives of public

or commercial associations who were in some way responsible for planning or implementing waste management in European cities. In 1928, the national associations in charge of waste disposal from Britain, Germany and The Netherlands met for the first time, and shortly afterwards they developed the idea of institutionalised cooperation between such associations. The result was an International Committee of Public Cleansing, soon renamed the International Association of Public Cleansing (INTAPUC), which was chaired until 1935 by the Inspector of Cleansing and Salvage of the British Ministry of Health, JC Dawes. INTAPUC held its first conference in 1931, followed by further conferences every three to four years. Members discussed topics related to waste transportation, storage and disposal in a monthly journal called *Public Cleansing*. The aim was to promote the exchange of ideas and practical knowledge regarding waste disposal, especially in urban areas. As growing industrialisation and changing life-styles created more and different types of waste, cities in many countries faced new challenges for which they had no tested answers ([Seeley 1967](#): 167–184). Sharing information between countries was considered helpful. For instance, in the 1960s, the German solid waste authorities felt that their country was following the development that the United States had experienced a decade earlier. Learning about the composition of waste in the US, therefore, would help them make plans for future challenges in Germany ([Jensen 1969](#): 5). They were not alone. The sixth conference in Frankfurt in 1957 was attended by 1,500 delegates from 29 countries.

In 1955, INTAPUC created the International Research Group on Refuse Disposal (IRGR), an association of academic institutions dedicated to research into the field. The IRGR held its own meetings and published its own information bulletin. Originally meant to be an academic complement to a practitioners' association, the differences were minor. A decade later, observers and members wondered if it really made sense to have two separate organisations addressing more or less identical topics ([Jaag 1969](#): 235–245).

Around the same time, the League of Nations Health Organisation (LNHO) also began paying attention to growing quantities of waste around human settlements. It included waste in its studies on housing (i.e. municipal waste) and rural health (i.e. animal dung and human waste). Though coming from a different perspective, its approach was similar to that of INTAPUC's. Increases in waste were accepted as a given and recommendations focused on disposal: fly-proof outdoor sanitation and dung collection at a safe distance from drinking water reservoirs for rural areas; controlled landfills, incineration and controlled fermentation for cities ([Borowy 2010](#): 333–356).

This early focus of both organisations on sanitation (i.e. human excreta) and municipal waste reveals the ambivalent nature of the major discard challenges of industrialising societies. At first sight, the materials and contexts concerned are so different as to have virtually nothing in common: humans do not defecate or urinate because of industrialisation, and discarded household items or demolished buildings are not compostable and do not transmit diseases. The problems they create can also be regarded as reflecting different phases of development: municipal and industrial waste may be the result of modernisation, a challenge caused by growing wealth and production; while human waste is problematic because of a lack of such development, i.e. the absence of a modern sanitation system.

However, these two forms of waste shared underlying dynamics: throughout history, cities have been built, torn down, discarded and rebuilt, using demolition waste as building material ([Hill 2016: 166–195](#)). Similarly, for millennia, urban and rural areas have been connected through an exchange of food and organic waste used as fertiliser, using a similar transformation from waste to resource, especially, but not only, in Asia ([Rogers 2005: 32–34](#); [Worster 2017](#)). Both materials formed part of circular systems that increasing industrialisation and urbanisation were making difficult to sustain: demolition waste came to include an increasing variety of partially hazardous materials, and using them for rebuilding required processes of sorting and decontamination, which were costly and, in some cases, impossible. Similarly, using human excreta as fertiliser became difficult not only because it was increasingly distant from the farmers who could use it, but also because germ theory warned of its pathogenic nature, while flush toilet sanitation meant that it was only available in the form of sludge, often heavily contaminated with industrial effluents ([De Feo et al. 2014: 3936–3974](#)). Thus, in both cases, a combination of growing populations and changing lifestyles interrupted imperfect but existing systems of circular reintegration of materials into human environments, because these environments and materials were no longer compatible and/or because of sheer overwhelming amounts.

When the World Health Organization (WHO) took up the work of its predecessor, the LNHO, this meant first and foremost a projection of the European concepts of sanitation onto the rest of the world. Flush-toilet sanitation had been a formative element of the emergence of public health in Western countries in the nineteenth century, and a working sewage system was widely considered foundational for modern urban life ([Ferriman 2007: 111](#); [Cullather 2004: 227–254](#)). Accordingly, for many years, most sanitation experts regarded excreta disposal as part of water management and sewage, and WHO published numerous studies on

the topic (e.g. [Berg 1949](#); [Townend 1959](#); [Baars 1962](#); [Gloyne 1971](#); [Subrahmanyam 1977](#)). However, this approach clashed with reality. Increasingly, health experts realised that getting access to flush toilets was financially out of reach for large parts of the global population, that the system was not necessarily well-adapted to water-scarce areas, and that it wasted potentially valuable fertiliser. From the 1970s onwards, WHO reports alternated between rejecting the use of excreta for food production, accepting the practice as a necessary evil, and embracing it while looking for ways to safeguard health in the process ([Borowy 2021](#)).

Other IOs faced the same dilemma. The Food and Agriculture Organization (FAO), with its programs directed at farmers around the world, largely reflected these same mixed feelings, providing similarly mixed messages ([Ignatieff and Page 1949: 39–42](#)). As did the World Bank, whose urban development projects often included sewage systems that were firmly based on the belief in flush toilets, often planned and implemented in cooperation with the WHO and UNDP/Special Fund ([World Bank 1969](#) and [1971](#)). However, by the 1970s, its reports also began to question this system as a universal one-size-fits-all model and to re-assess the value of human waste as part of a circular agricultural system ([Shuval et al. 1981](#) and [1986](#)).

Meanwhile, topics related to industrial and household wastes, which INTAPUC and IGRG were active on, were slow to get broader IO attention. Municipal waste would naturally form part of urban housing, but at the time, there was no IO dedicated to housing or urbanisation. The topic was scattered around IOs, as the UN Bureau of Social Affairs, ECE, WHO, ILO and the World Bank all had some small early programs on housing with limited attention to solid waste ([Harris and Giles 2003](#)). As a result, the WHO remained the IO with most experience, comparatively speaking, on this topic into the 1960s.

3. TAKING THE LEAD: THE W.H.O. AND THE INTERNATIONAL REFERENCE CENTRE: 1966–1970

This background explains why WHO took the lead in taking a comprehensive look at waste even though, in other ways, it was an unlikely place to do so. At the time, WHO was strongly committed to a vertical approach to public health, and most of its resources were dedicated to its eradication campaigns on malaria (1955–69) and smallpox (1967–79). Of the two, only the second was successful, but both were extremely costly in terms of funding and manpower, leaving only limited space for other topics ([Cueto et al. 2019: 107–124](#)). Actually, it is not clear why waste was expanded as a topic in 1966. The date coincides with the publication of an article by Kenneth Boulding discussing ‘The Economics of the Coming

Spaceship Earth' ([Boulding 1966](#)). This foundational text for the modern day concept of a circular economy contrasted the world of a cowboy, living in a wide open area in which resources could be amply found and freely discarded, to that of an astronaut, whose space limitations forced him to continually recycle everything he used. While it is tempting to see a connection, it is unlikely that a single text determined decisions on work programmes made in Geneva. But the overall awakening of critical thinking about discards, which the text reflected and spurred, may have affected planners in Geneva. At any rate, 1966 marked a turning point for WHO work on waste.

The existing Water and Waste Unit, headed by Luis Orihuela, a Peruvian with a background in water and sanitation work, was renamed Waste Disposal Unit. At the same time, Callis H. Atkins became director of the Division of Environmental Health. Atkins joined the WHO after a 30-year career as Chief Engineer and Assistant Surgeon General at the US Public Health Service (USPHS) where he had focused on water pollution control in the United States and as an advisor to the government of India ([National Science Foundation and National Environmental Health Association, s.d.](#)). Also in 1966, WHO created the 'Scientific Group on Advanced Treatment of Waste', designed to take stock of existing knowledge about waste waters and solid waste management and identify further research needs ([WHO 1967](#): 5). This group connected WHO with INTAPUC and IRGR, since several group members belonged to one or both of these organisations. And there were plans for closer cooperation, as became clear when M. English, Honorary Secretary of INTAPUC, informed Atkins that INTAPUC wished to apply for WHO recognition as an 'international Organisation in the field of public cleansing' ([English 1966](#)).

Both sides were set to benefit from cooperation. INTAPUC could expect to gain international status through a connection to WHO, while WHO could hope to gain expertise from INTAPUC's experience in municipal solid waste management. However, their different backgrounds came with different conceptualisations of waste and geographical orientation. INTAPUC consisted of fifteen national organisations, mostly in Europe as well as the US and Canada, though individual members also came from non-European countries such as Tunisia, Japan and Brazil. Its focus was on urban waste in industrialising societies. Its main purpose was to help municipalities adapt to these changes. By contrast, WHO cooperated with health administrations around the world. Its main concern was sanitation, based on a conceptualisation of waste as a problem of a lack of development, particularly in low-income countries, where the principal problem was not modernisation but perceived backwardness. The establishment of the Scientific Group showed that

some people in WHO saw a need to take a broader view of waste.

In December 1966, this new group met for the first time. Most members were university professors from Europe, South America and the US, though two were government officials ([WHO 1969](#)). The vice-chairman of the group, Otto Jaag, had ties to INTAPUC and the IRGR and was also director of the Federal Institute for Water Supply, Sewage Purification and Water Pollution Control (EAWAG), an institute of the prestigious Federal Polytechnical School (ETH) in Zurich. True to its academic backgrounds, the group took a theoretical approach to what constituted waste and why it was increasing. The meeting produced a technical report which proved foundational for subsequent WHO activities. It left no doubt that it regarded waste as a serious problem born from the economic success of modern societies:

Today, the environment is being polluted as never before by the accumulation of liquid and solid wastes. This forms a staggering burden that is born of growing affluence, nurtured by rising population, matured by technology, and all but neglected by society ([WHO 1967](#): 5).

The text provided a detailed analysis of the multiple types of waste of concern – including household, industrial, agricultural and demolition wastes, resulting from various manifestations of modernisation such as urbanisation, industrialisation, changing lifestyles, improved living standards and technological advances. The group blamed many actors for this development, including individuals who showed 'irresponsible personal attitudes', industry which had 'usually not considered the effect that the wastes from new products or new industrial processes may have on the water environment', as well as governments that rarely considered the possible long-term effects of new industrial projects ([WHO 1967](#): 7, 10). Nor was there a simple solution. Among other frequently endorsed strategies, the group rejected reuse and recycling, which appeared to reduce waste quantities but merely postponed final disposal. And many forms of disposal only moved waste from one physical form to another, which might end up exacerbating pollution, a physical truth which policy makers should acknowledge:

The disposal of wastes must take place within a closed environment comprising only earth, air, and water ... Any or all of the phases may be polluted, and any solution to the general problem of the disposal of wastes therefore involves a decision as to which part of the environment can accept residues with least damage to the whole ([WHO 1967](#): 6).

Group members also called for international cooperation in research and for collecting basic data about organisational methods and technologies in different countries ([WHO 1967](#): 25). Atkins took

the cue and began establishing an 'International Reference Centre on Wastes Disposal' (IRCWD) to do as the report had suggested ([Atkins 1967](#)).¹ It was a long-term plan, meant to provide crucial services to industrial and developing nations alike ([Director-General 1967](#); [Izmerov 1968a](#)).

The thinking was big, but the available funding was small. As disease eradication campaigns gobbled up most WHO funding, the amount of money available for something whose relation to health was indirect and difficult to pinpoint was pitiful. A proposed WHO budget estimate earmarked \$5,000 for the project for each of 1967 and 1968 and \$10,000 for 1969, though Atkins estimated that annual costs of \$206,000 would be necessary ([Gloyne 1967](#)). The discrepancy was grotesque and suggests little enthusiasm for the plan within WHO leadership. It also meant that the new institute, whichever it might be, needed to have access to funds from other sources. In December 1967, Orihuela approached Jaag of the Scientific Group ([Orihuela 1967](#); [Jaag 1967](#)). His institute, EAWAG, checked many of the boxes for what a reference centre would presumably need to be: it had a large staff of 85 people and already had a history of collaboration with numerous IOs while doing research on a comprehensive range of topics related to water supply and waste disposal ([Jaag s.d.](#)). Negotiations were conducted at the highest level, involving WHO Director-General Marcelino Candau and the Swiss Ministers of Health and of Education ([Jaag 1968a](#); [Sauter 1968](#); [Burckhardt 1968](#); [Izmerov 1968b](#)). Funding came together when Atkins' former employer, the Office of Solid Waste of the US Public Health Service, offered to support the centre with \$15,000 to \$20,000 per year for supplying documentation ([Lovell 1968](#)). The Swiss government promised 60,000 Swiss Francs for 1968 and 260,000 for 1969 ([Izmerov 1968c](#)). In late September 1968, agreements with the Swiss government and the Federal Polytechnical School were signed, and the IRCWD officially came into being.

Its main function was to gather information, such as basic data on *per capita* waste generation, the composition and characteristics of waste and waste management practices around the world. It was also supposed to test analytical methods regarding pollutants and pathogens while setting up a network of national reference centres ([Jaag 1968b](#); [WHO 1968](#)). It was the closest any institution ever got to being a central organisation in charge of waste worldwide. Collaborating institutions were expected to engage in cooperative research projects, to make available useful research results, and to support national waste management activities. However,

contrary to the Scientific Group, to which it owed its creation, the IRCWD took a technical rather than a conceptual approach. Focusing entirely on disposal, it never discussed ways to reduce the amounts that needed to be disposed or questioned why there was so much waste in the first place. Systemic questions of production, consumption and value attribution remained unexplored.

Nevertheless, the IRCWD jumped into action with impressive energy. Within a year, it had six task forces, focusing respectively on documentation, systems analysis, economics and financing, technology, public health and training. To strengthen its information service, it negotiated a collaboration with the Dokumentations-Zentrale in Düsseldorf, which produced 300 scientific abstracts per month, and with the Solid Waste Information Storage and Retrieval System (SWIRS) of the Bureau of Solid Waste Management of the US Department of Health, Education and Welfare. The plan was to establish a literature exchange service with more than 500 European and 100 overseas institutions. IRCWD also prepared practical projects including an investigation into simple and economical processes to reduce the volume of solid waste in households and, in response to a Chilean request, proposed a method for the recovery and economic use of wool washing which it submitted to UNIDO for possible further use ([WHO IRCWD 1969a](#) and [1969b](#)). Orihuela was confident that this exchange of information and some technical assistance would enable developing countries to advance to 'hygienically and scientifically based systems' bypassing a lot of the problems, especially with regard to pollution, which developed countries had found so costly ([Ellis et al. 1969](#)). It was a one-world approach in which all countries should benefit from pooling research and information, though those in the global South especially so.

In April 1970, the EAWAG moved to new premises in Dübendorf, a village some ten kilometres outside of Zurich, and the IRCWD received a spacious office and laboratory area for its eight professional staff members. And there was some indication that this change might coincide with a broader change in attitude when, after some discussions, Orihuela and Jaag agreed to change its name from being about 'Wastes Disposal' to 'Wastes Management', arguing that challenges went beyond the technicalities of disposal and included 'equally important economic, legal, administrative and educational considerations' ([Orihuela 1970a](#)). It was a potentially major change that suggested a shift away from a view of waste as an inevitable result of economic activities, requiring better technical fixes, to one seeing waste as a systemic problem requiring reflection on the way modern lives were organised.

However, early research focused on data gathering more than on questions of principle. Projects included a collection of methods of sampling and

¹ The language used for the title of this institutions was inconsistent. While early sources, including the one cited here, referred to it as a Reference Centre 'on' Wastes Disposal, for most of its existence, its official name was 'Reference Centre for Wastes Disposal'. This paper, therefore, uses the latter name unless quoting sources that use the earlier form.

analysing solid waste and the establishment of a manual for solid waste management. The aim was to provide guidance for standardising methods later. Meanwhile, international cooperation was taking off quickly: the IRCWD welcomed a steady stream of international visitors (20 people from 16 countries in the first half of 1970), most of whom came with WHO fellowships. And it established an impressively global network of collaborators: among the more than 30 institutions, which WHO designated National Reference Centres, ten were located in Europe, two in Oceania, three in the Americas, six in Asia, and four in Africa ([WHO IRCWD 1970](#)). A year later, the IRCWD began publishing a newsletter designed to disseminate information about disposal practices and to coordinate relevant research programs ([IRCWD 1971a](#)). In that vein, the IRCWD prepared a survey on solid wastes management practices and distributed the results among collaborating institutions. It discussed the advantages and disadvantages of landfilling, composting and incineration, highlighting the benefits of composting and recycling. These studies were complemented by a practical project when the IRCWD staff got the Swiss town of Buchs to experiment with separating bottles of glass and plastic from waste, making sure the glass would be used by glass manufacturing firms while testing ways of reusing plastics ([IRCWD 1971b](#)). Overall, at the beginning of the 1970s, IRCWD had no revolutionary appeal, but it appeared to be on track to becoming the globally recognised authority for questions related to waste. The approach was modest, focused on technical details; but also big, claiming global relevance, with some indication that the topics might move into more systemic questions later.

In June 1971, the WHO Expert Committee got together again in Dübendorf and presented more far-reaching proposals: all countries should organise waste related R&D at universities and in the private sector, monitor the effectiveness of existing systems and establish shared codes of practice. In addition, countries should implement educational programs for officials and the public and conduct solid waste planning activities at all levels of government, all under the auspices of the IRCWD and national references centres ([WHO 1971](#)). The suggestions went beyond what the IRCWD planned, and it was also more radical than what any other IO had proposed at that stage. If discussions and policy implementation had followed that lead, it might have changed the way societies both in the global North and the global South addressed the production and treatment of waste. However, these initiatives ran into various problems, located partly within the IRCWD and partly in the system of related organisations in Europe.

One problem that showed early on at the IRWD was its scarcity of resources, both in funding and people. A project on the reduction of waste showed

only little progress, since the investigator was inexperienced and needed a lot of help from colleagues working on other topics ([WHO s.d.](#)). The steady stream of international visitors was a mixed blessing ([Wasmer and Jaag 1970](#)). Though a welcome sign that the idea of an IRCWD was accepted as filling a real need, accommodating their specific information and research needs proved a drain on the funds and energy of the fledgling institution. Meanwhile, the underlying purpose of the WHO and IRCWD program did not necessarily become clear to outsiders. Visiting a congress in California in August 1970, IRCWD official Hans Wasmer encountered critical questions about its long-term goals. He recommended that WHO should provide a 'sound long range program' including specific implementation steps as soon as possible ([Wasmer 1970](#)). Possibly, these questions reflected a generally critical view of international organisations at the time, as he suspected. But the dwindling commitment of the WHO bureaucracy also did not help. In 1970, Orihuela temporarily left his post in Geneva to pursue post-graduate studies of public health and sanitary engineering at the University of Chapel Hill ([Orihuela 1970b](#)). When he returned in October 1971, he found that he was the director of a new unit called Community Water Supply and Sanitation, which resulted from the merger of the two former units of Community Water Supply and of Wastes Disposal ([Orihuela 1971](#)). This reorganisation effectively ended a short-lived independent unit at WHO specifically dedicated to waste.

To some extent, this downgrading of the topic seems counter-intuitive, since at that point waste was attracting attention within the budding environmental movement in Western countries ([Haq and Paul 2011](#)). At the same time, national legislators increasingly recognised that waste was an issue requiring regulation. The US took the lead in passing a Solid Waste Disposal Act already in 1965. Between 1970 and 1975, numerous industrialised European countries passed one or several acts of legislation regulating waste. The titles of these laws, ranging from 'Resources Recovery Act' in the US (1970) to the 'Act on Toxic Waste' in Belgium or the Finnish Act on the 'Removal and Disposal of Abandoned Vehicles' (1974) reflected the various perspectives on waste as a potential raw material, a health hazard or an environmental nuisance ([WMPC 1976](#)). In Socialist Hungary, the understanding of waste shifted from an efficiency model focused on recycling to one of waste reduction, marking the rise of shared attitudes on both sides of the Iron Curtain ([Gille 2007](#)). A list of legislation regarding waste disposal in 23 countries in Europe, Asia and South America, compiled at the IRCWD in 1971, showed that most countries had some form of regulations about where and how waste materials should be discarded. But rules differed widely and there was no coordination between countries or even ministries. Often laws were

difficult to find, with different elements hidden within legislation about construction, water, industry, municipalities or public health ([Rudolf 1971](#)).

In theory, this finding should have underscored the need for a coordinating body like the IRCWD. But in addition to the financial issues, mentioned above, the centre found itself sidelined by developments, as waste was losing status within the WHO. Meanwhile, it was taken up by various other IOs which had not paid much attention to the issue so far. The rising status of waste as a topic concerning IOs, therefore, ironically weakened the position of IRCWD, which struggled to keep a central position in the face of growing but fragmented attention to the issue. Most of these IOs were in charge of industrialised economies and were primarily interested in the situation in high-income countries.

4. INTERNATIONAL WASTE GOVERNANCE IN FLUX: 1970–1972

One new strand of IO waste work emerged through the initiative of the European office of WHO in Copenhagen, which established a Working Group on Solid Waste in 1970. Its participants mixed a focus on disposal with some interest in prevention through recycling, albeit within clear systemic limitations. At their meeting, participants discussed practical details, such as a tax on single use items or forcing producers to state the cost of packaging on the packages ([Sumner 1971](#): 17–18). Participants also discussed the potential of recycling and found it quite limited: collecting and sorting the various wastes was costly and work-intensive, and the feasibility of the schemes depended on the demand for recycled material, which was high for metals but low for cheap plastics ([Sumner 1971](#): 18–24). Inexorably, the IRCWD was drawn into these discussions. Five months later, at a workshop jointly organised by the WHO EUR Working Group and the Government of the Netherlands, IRCWD manager Wasmer participated. This time, discussions took a more governance-oriented turn. Among other measures, its report called for the preparation of a ‘model European code of practice for land disposal of solid wastes’ and for studies on how legislative and taxation measures might influence the quantity and composition of wastes ([WHO Regional Office for Europe 1971](#)). This code, published a year later, provided copious recommendations on practical questions of site selection for landfills, transportation, and operational practices ([WHO Europe 1972](#)). That was useful for countries in Europe within a rationale that accepted waste as an inevitable side effect of modern production and consumption.

Meanwhile, the IRCWD tried to stake out its niche by shifting its focus to the global South. Unsure if this was a winning strategy, IRCWD manager Wasmer noted a ‘tremendous amount of mail coming in

from UN, FAO, ECE, EEC, OECD, Council of Europe etc.’ and commented: ‘In my personal opinion there is certainly an overlap of efforts at least in the industrialized countries. I do hope that we are on the right track when we concentrate our activities on developing countries, since WHO has a very good record in this respect’ ([Wasmer 1971](#)). This option would focus on problems of waste management resulting from underdevelopment, and it would be able to make use of the WHO infrastructure for research and contacts. It was a plausible reaction, given the circumstances, but at the price of losing connection to some trends of the time.

In addition, when the IRCWD received a new partner of sorts, it was a mixed blessing. In January 1970, INTAPUC merged with the IRGR to create the International Solid Waste and Public Cleansing Association (ISWA). ISWA had national members in nineteen countries. Its stated purpose was to exchange information about waste management experiences, to provide a means of communication for practitioners and academics, and to coordinate research in the field. It held meetings, began publishing an information bulletin and, as planned earlier, it entered into official relations with WHO in February 1971. Its aim and activities were virtually identical to those of the IRCWD and there was important overlap in location and personnel. The Swiss member institute was EAWAG, and Jaag, who had retired from his position as director of EAWAG and the IRCWD, became chairman of the Scientific Committee of ISWA (which was a non-salaried position). Subsequently, EAWAG housed the ISWA Secretariat (Various Respondents s.d.).

This move may have been intended as support for the IRCWD, but it also created a competition of sorts at a time when its luck was fading. When Orihuela visited the IRCWD in February 1972 to talk with Jaag’s successor, former Harvard Professor Stumm, he found a mixed picture. In the past three and a half years, the institute had created a documentation service, it had published several collections of waste-related terms, and several reports on management practices and methods of analysis. It had plans for further studies on technical aspects of disposal and treatment with a view to providing guidelines. Such work was useful rather than inspiring, providing practical information rather than exciting new ideas, and its plans seemed to mimic what WHO EUR had already provided for Europe. Indeed, the entire institution seemed to be on a downward trend: staff had shrunk to six people, US financial support had apparently ended, and Stumm did not appear happy about the degree to which EAWAG was subsidising the IRCWD from its regular budget ([Stumm 1972](#); [Orihuela 1972](#)).

This situation may explain why the IRCWD received little attention at the 1972 UN Conference on Human Environment in Stockholm. The conference responded to growing public pressure from societies

mainly in the industrialised countries, where an environmental movement was gaining ground. The conference has rightfully been regarded as a major step forward in awareness of environmental threats and towards global environmental governance. But prior manoeuvres from several sides meant that its focus would be on organising environmental protection, not on systemic socio-economic changes. The International Chamber of Commerce established contacts with the organisers, which would develop into a long, mutually welcomed relationship with UNEP, assuring that business interests would be represented at international environmental negotiations ([Bergquist and David 2023](#)). Several industrial countries organised in an informal 'Brussels group' to coordinate strategies that would prevent overly radical demands at the conference ([Hamer 2022](#)). And governments of the global South, suspicious that any resulting regulations might be ploys to prevent low-income countries from developing, only participated after their concerns were addressed in a preparatory meeting and report ([Founex Report 1971](#)). It was clearly not a context conducive to discussion of waste as a sign that the existing economic system should be questioned by a strong central institution.

Instead, references to waste were scattered throughout various recommendations in the Conference Action Plan: this plan placed the WHO in charge of water supply, sewerage and waste-disposal systems; the FAO in charge of the recycling of wastes in agriculture, the disposal of toxic chemicals, heavy metals, and other wastes in the seas; and the International Atomic Energy Agency in charge of radioactive waste. Somewhat confusingly, the Plan also remarked on the 'co-ordination work already being provided on the regional level, especially by the Economic Commission for Europe', while it mentioned the IRCWD only as an example of bodies supporting government action regarding water resources ([UN Conference on the Human Environment 1972](#)). These categorisations gave too much credit to UNECE and too little to the IRCWD.

Arguably, this might also have been a moment in which the IRCWD had the opportunity to distinguish itself from other IOs by exploring (or embracing) the radical critique of an economic system that generated waste on a massive scale, which was being discussed at that time in many forums, including at a series of lectures organised by NGOs and held at an abandoned airfield near Stockholm parallel to the official conference ([Satterthwaite 2006](#)). These discussions reflected several publications by renegade Anglo-Saxon economists in the tradition of the essay on cowboy and astronaut economies by Boulding, mentioned above. The most high-profile publication was the 1972 study on *Limits to Growth*, conducted by an MIT research group led by Dennis and Donella Meadows, which would only come out some months after the Stockholm conference but

whose contents had already leaked. It presented a series of scenarios combining various developments in population, food, resources, industrial output and pollution. Most scenarios foresaw systemic collapses. One equilibrium scenario required radical policy changes ([Meadows et al. 1971](#)).

The book polarised readers. It met stiff resistance, especially among economists, who managed to establish as conventional wisdom that the scenarios represented bad research based on bad data ([Bardi 2011](#)). But some readers felt inspired to rethink the world. Paul Roberts was one of them. Roberts had degrees in chemical and environmental engineering from Princeton, Cornell and Stanford universities and had just joined the IRCWD in 1971 ([Paul V. Roberts, Obituary 2006](#)). In the fall of 1972, he presented the findings of *Limits of Growth* in some detail in the IRCWD newsletter and, on that basis, rejected the idea of waste management except as part of a profound and comprehensive change in social organisation, arguing that 'The consequence of this "symptom treatment" approach to waste management is likely to be an even more serious threat to mankind's survival in one or two generations than exists at the present time' ([Roberts 1972](#): 5). He called for immediate population stabilisation, a conversion to a recycling economy, the replacement of synthetic with natural products, and generally a new socio-economic system emphasising human relationships and quality of life (*ibid.*: 6). If he had hoped to galvanise policy makers, his colleagues at IRCWD or the public into discussions and possible implementation of such policies, he must have been disappointed. No response to this article has been found.

Instead, the WHO and IRCWD continued on the path of defining their profile by focusing on waste challenges in the global South. Officers of WHO and directors of collaborating institutions, meeting in Dübendorf in November 1972, clearly announced that this principle would inform their subsequent programme, and they designated the Central Public Health Engineering Research Institute in Nagpur, India, to be a WHO Regional Reference Centre for Wastes Disposal. Additional regional reference centres were planned for Asia and Africa ([IRCWD 1973](#)).

The decision did not lead to the robust programme it possibly deserved. During the following years, IRCWD continued its activities, though apparently on a small and declining scale, largely limited to collecting documentation about research going on elsewhere. By 1982, its staff had shrunk to four people, complemented by outside consultants. The newsletter announced that the use for a reference centre in the traditional sense had declined and that future IRCWD activities would focus on questions of waste disposal in developing countries ([IRCWD 1982](#)). Newsletters kept appearing sporadically with long lags in between, until 1993. In May 1995, a follow-up brochure called *SANDEC News* announced

a change of name of the organisation to one dedicated to 'Water and Sanitation in Developing Countries' ([SANDEC 1995](#)). For all practical purposes, the experiment with an organisation dedicated to questions of waste in all its forms had come to an end.

Meanwhile, waste work mushroomed into other IOs. UNECE, which had prematurely been credited with having coordinated international work on waste, took the hint and began adopting the topic into its budding environmental programme by calling a conference. This initiative triggered irritation both in WHO Europe and at WHO in Geneva, where officials felt ECE was duplicating work long done by them and pushing WHO out of their range of work ([Kumpf 1973](#); [Stanovnik 1973](#); [Chief CWSS 1972](#)). However, there was not a lot WHO could do to prevent ECE or anyone else from encroaching on territory they considered theirs, so they embraced what they could not change, and in September 1973, the WHO Expert Committee on Wastes Disposal welcomed delegates of ISWA, the World Bank, UNECE, UNEP and the IRCWD to its meeting ([IRCWD 1974](#)). Meanwhile, UNECE along with the OECD sent observers to meetings which NATO organised as part of its pilot project on hazardous waste, organised between 1974 and 1977 ([Borowy 2024](#)). In July 1975, the European Communities began coordinating its patchy waste-related programmes and issued a directive, which demanded that member states report on the waste disposal situation to the Commission every three years, though it left important exceptions such as radioactive waste, waste from mining, and gaseous emissions ([Council Directive 1975](#)).

Increasingly, waste became a shared topic – studied, discussed and negotiated in an amorphous space of cooperative meetings and projects. Despite the multitude of IOs involved, there was a wide-ranging consensus on what the questions at stake were. All initiatives conceptualised waste as an environmental challenge born from modern development, generally to be addressed by technological improvements in disposal methods. Most focused on high-income countries in the Global North.

5. CONCLUSIONS

Throughout the twentieth century, waste has increasingly been recognised as being as much a challenge for industrial societies in the global North as for low-income countries in the global South. As IOs became involved in debates about how to address this issue in the 1960s and early 1970s, they had to face decisions on how to conceptualise it. One central question was whether to regard modernisation as the solution or as the problem. In other words, faced with increasing quantities of material that needed to be discarded, should societies aim at reducing the disposable material or at improving

disposal methods? And were the answers equally valid in all parts of the world, or did they require regional differentiation? Finding an answer, or even clearly defining the question, was not an easy task. The very ubiquity of waste, emerging virtually everywhere in countless different contexts and different shapes and forms, made it difficult to find an effective approach. Most IOs engaged in individual studies on specific topics, which had the advantage of providing information on clearly defined problems but risked appearing like arbitrarily picked pieces of a far bigger puzzle. In a few occasions, researchers indicated a feeling that piecemeal studies were no adequate way of grasping the topic and wrote insightful analysis that waste touched the core of how humans interacted with their environment and needed to be addressed accordingly.

For a brief moment, the IRCWD may have had a potential to concentrate and move forward the different perspectives in a way that might, perhaps, have gained sufficient authority to influence the international agenda on waste policies. But chances were slim at best. The fact that it was tied to a health organisation and a research institute with a focus on water management, both of which regarded waste as marginal to their actual work, meant that it received merely limited support from a limited number of IOs representing a limited range of perspectives. And the brief moment passed when a growing number of institutions all tried to carve out niches for themselves.

By default rather than by clear definition, early IO work endorsed the mainstream view that the production of waste was the result of modernisation but that disposal required further modernisation. IO bodies would occasionally lament the former (its effect on increasing waste) but largely focus on the latter (its effect on disposal). To some extent, this outcome was spurred by the fragmentation of IO activities on waste, which encouraged a fragmentation of initiatives and discouraged projects that might have looked for common underlying dynamics. On the other hand, despite this fragmentation, there was remarkable consensus between IOs that the observable development of increasing quantities of waste was problematic, and all more or less agreed on its core reasons: more people, more production and consumption, more cities, more supermarkets, more packaging, more lifestyles that demanded the categorisation of used materials as waste and fewer structures that favoured reuse and recycling. However, it was also clear to all involved that these underlying dynamics were near impossible to address effectively. Reactions to plans for the 1972 Stockholm Conference, and to the publication of *Limits to Growth* in the same year, made very clear that a profound challenge to a system that generated substantial wealth as well as too much waste would provoke determined opposition, in the global North as well as the South. There were

few incentives, therefore, to construct waste as a systemic problem of modern lives, and a lot of incentives to treat it as a technical problem of disposal management. This approach was easily adjustable to existing North–South relations, in which practices of the industrialised countries were often expected to provide solutions for the problems of low-income countries, and addressing problems of waste could be viewed as part of the modernisation agenda that societies in all parts of the world had more or less embraced.

Not only societies. In one way or the other, all IOs were committed to developments designed to make societies wealthier, facilitate technological improvements, increase living standards and generally make life more diverse and convenient. Thereby, they were profoundly embedded and often active agents in a type of modernisation which, apparently, produced not only better living standards but also growing amounts of unwanted things. This background gave the decision between piecemeal and general approaches an almost existential character: if waste problems could be addressed (and solved) on a case-by-case basis, IOs could be seen as able managers of an external challenge. If waste was found to be the result of concepts and processes to which IOs were committed, then questioning the underlying reasons for waste could easily morph into questioning the convictions on which many IOs were based. Nobody within IOs was interested in that.

In the end, waste was so deeply intertwined in the fabric of perceived socio-economic improvement as to make it virtually impossible to address the core reasons for waste increases.

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