

2015

**Public Participation and  
Climate Governance  
Working Paper Series**

**Managing Energy Demand Through Local Public  
Participation: Examples from Japan and France**

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## 1 Introduction<sup>1</sup>

Managing energy demand is an important strategic action in curbing and adapting to climate change. Indeed, energy production and use is responsible for the majority of greenhouse gas (GHG) emissions.<sup>2</sup> Conversely, climate change affects energy demand – for example, through the increasing use of appliances such as cooling or warming systems. In light of these factors, energy demand management (EDM) is a key strategic policy to strengthen energy security at the national level.

EDM involves reducing energy needs and using energy efficiently. It may also refer to the production of renewable energies. EDM is based on the use of efficient appliances or the transformation of consumption patterns (for example, avoiding peak demand hours). While this policy involves a wide array of stakeholders – from national governments, which enact the laws regulating the energy systems, to private utilities, which develop relevant technologies – its target population is the final customers, or end-users. These are split into two groups: the industries and the individuals.

The literature acknowledges the need to change behaviour in order to reduce demand and achieve step-by-step changes in energy efficiency. It also points at the need for more interactive, deliberative communication between decision-makers, technical experts, and the public (Owens and Driffill 2008; Verbong et al. 2013; Geelen et al. 2013). In fact, the transformation undertaken by the energy systems also comes along with a shift in the role of end-users, from a passive consumption to a more active contribution (Geelen et al. 2013). Participation therefore appears to be a relevant response to the EDM challenge.

Against this background, this paper observes how, at the very bottom of the multilevel government scale, local governments involve citizens in EDM. It tackles three questions: What forms of participation are used? Why do local governments promote public participation? And finally, what are the impacts of participation on energy demand?

The literature has now abundantly shown the key role of local governments in environmental and climate change policies (Bulkeley and Betsill 2003; Kousky and Schneider 2003; Otto-Zimmermann 2012). Indeed, local governments are the recipients of international and national norms and are responsible for their implementation. They are also autonomous, and have some resources to provide essential services such as transport, waste management or energy provision, which have an impact on energy demand and the environment. Being in charge of local affairs, they know best the local context. Thus, they can easily organise meetings and hearings for citizens with other territorial stakeholders. Nevertheless, their capacity to act is largely determined by the local context.

This paper focuses on two states: France and Japan. Both of these countries were party to the first phase of the Kyoto Protocol, which sets targets for GHG emissions reductions.<sup>3</sup> Currently, only France

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<sup>1</sup> The author is grateful to the AXA Research Fund for its support (Postdoctoral Fellowship).

<sup>2</sup> For instance, the sector accounts for 80% of the total GHG emissions in the USA (EPA 2010).

<sup>3</sup> France has to stabilize its GHG emissions to the levels of 1990 and Japan had to reduce by 6% its emissions.

remains committed to this international treaty. Yet Japan, which closed its nuclear power plants following the 2011 Fukushima incident, faces important energy security issues. Consequently, both countries are in a kind of experimental stage where they are looking for alternative solutions to fossil fuel energy and trying to initiate their energy transition. While national authorities are paying increasing attention to the involvement of energy end-users, the forms of participation that they promote are different and heterogeneous, even within each country. The paper examines one example of public participation in each state. In the example of France, the paper looks at the involvement of the local citizens in the development of the local climate plan, while the Japanese example examines the users of new energy services operated within the framework of smart grids.

Prior to the French and Japanese case studies (sections 3 and 4), section 2 presents briefly the principle of public participation in law, in order to provide context for the legal framework within which local governments act. Finally, section 5 discusses the results observed in the case studies, and section 6 provides some recommendations.

## 2 Public Participation in Law

Both international law and domestic law – in France and Japan – refer to public participation. These legal regimes shape the framework within which local governments take action.

### (a) International Law

Public participation is a difficult principle to grasp. In international law, it appears in several areas of law, and has a threefold definition in the environmental area. Moreover, its scope varies according to the context.

#### (i) From a Political to an Environmental Principle

Public participation is a political principle, which refers to the need to involve the addressees of a decision in the decision-making process (Pateman 1970). The term “public” generally refers to individual citizens and excludes government authorities. Public participation found its legal translation in participatory rights, such as the right to vote and to run for office. These were enshrined at the top of many national legal orders. At the international level, the right is acknowledged in the 1966 UN International Covenant on Civil and Political Rights. Article 25 provides that “Every citizen shall have the right and the opportunity [...]: (a) To take part in the conduct of public affairs [...]; (b) To vote and to be elected [...]; (c) To have access, on general terms of equality, to public service”.<sup>4</sup>

Later on, this principle was incorporated into environmental law. Principle 10 of the 1992 Rio Declaration states that “Environmental issues are best handled with participation of all concerned citizens, at the relevant level”.<sup>5</sup> Although this principle is not binding, the huge consensus met by the

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<sup>4</sup> Available at: <http://www.ohchr.org/en/professionalinterest/pages/ccpr.aspx>.

<sup>5</sup> The full principle 10 states: “Environmental issues are best handled with participation of all concerned citizens, at the relevant level”. At the national level, each individual shall have appropriate access to information concerning

Declaration (179 signatories) proved its significance and showed a commitment from states to implement it. In parallel, the action plan adopted in Rio, named “Agenda 21”, urged local governments to enter into a special dialogue with its citizens and private enterprises. Twenty years later, states reaffirmed public participation as an essential principle of sustainable development in the final declaration of Rio +20.<sup>6</sup> The term “public” now refers to a wide variety of stakeholders depending on the context. It may include, among others, the private business sector as well as the users of public services.

### *(ii) The Three Branches of Public Participation in International Environmental Law*

According to Principle 10 of the 1992 Rio Declaration, public participation is composed of three branches: access to information, participation in decision-making, and access to administrative and judicial review. Access to information means that public authorities provide information on the state of the environment, as well as on their decisions on that matter. Participation in environmental decision-making refers to the rights of citizens to express their views and influence policy-making. Finally, access to administrative and judicial proceedings refers to the right of citizens to have access to neutral authorities (courts, arbiters, mediators) to resolve disputes over access to environmental information and decision-making participation. Local governments are primarily involved in the two first branches: information and decision-making. In fact, judicial and administrative review processes usually remain under the jurisdiction of the central governments.

### *(iii) Scope of Public Participation*

The scope of public participation is national and international (Ebbesson 2007). At the international level, public participation entails promoting the participation of non-state actors in international conventions. Stakeholders sharing the same interests cluster in “constituencies”, which get official accreditation to participate in the conference of parties (COP) of various conventions. However, the access of non-state actors to international administrative and judicial remedies remains limited.

For instance, in the case of the climate regime, the United Nations Framework Convention on Climate Change (UNFCCC) does not refer to the participation of citizens. However, as with other international treaties, it does foresee the participation of non-state actors and non-governmental organisations (NGO) at the COPs. The constituencies recognized by the UNFCCC are the Business and Industry Non-Governmental Organizations, the Environmental Non-Governmental Organizations, the Local Government and Municipal Authorities, the Indigenous Peoples’ Organizations, the Research and Independent Non-Governmental Organizations and the Trade Union Non-Governmental Organizations (Schroeder and Lovell 2012).

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the environment that is held by public authorities, including information on hazardous materials and activities in their communities, and the opportunity to participate in decision-making processes. States shall facilitate and encourage public awareness and participation by making information widely available. Effective access to judicial and administrative proceedings, including redress and remedy, shall be provided.”

<sup>6</sup> Paragraph 43, “The Future We Want”, available at: <http://sustainabledevelopment.un.org/futurewewant.html>.

Second, public participation is also included in national legal orders. National law provides the rules for its implementation. This is also sometimes done through regional treaties. For example, the 1998 Aarhus Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters created binding obligations for its ratifying states.

## **(b) National Law**

In France and Japan public participation has a different legal content.

### *(i) France: A Constitutional Principle*

In France, public participation in environmental matters emerged as a legal principle following the Rio Declaration of 1992. France then became party to the Aarhus Convention and as such has a binding obligation to implement the principle. Subsequently, public participation was included in the national Environmental Charter, which gained constitutional value in 2005. Consequently, public participation stands at the top of the normative hierarchy and applies to all the activities of public authorities. Moreover, several sectoral laws (land-use, urbanism, transport) also refer to public participation. With regard to environmental and climate change planning, the Ministry of Ecology and Sustainable Development has even specifically recalled the need to implement public participation.<sup>7</sup> Most of these sectors fall within the remit of local governments.

### *(ii) Japan: A Legislative Principle*

In Japan, the affirmation of the principle is more piecemeal than in France, and does not have a constitutional value. The Basic Environmental Law (BEL) sets the standard for environmental matters. It has a participatory approach, as it states the various rights and duties of different stakeholders: the national and local governments (art. 6 and 7), corporations (art. 8), and citizens (art. 9). On the basis of the BEL, the Cabinet formulated in 1994 a Basic Environmental Plan. This plan includes public participation among its four long-term objectives. This is also an objective of the Future Environmental Conservation Policy, another governmental policy document.

In addition, over the years the Japanese government has adopted several norms to support public participation in environmental governance. Among others, citizens can refer to the Rivers Act 1997, the National Spatial Planning Act 2005, or the 1999 Act on Access to Information held by Administrative Organs, which includes a right to request the disclosure of administrative documents (Okubo 2013).

Finally, local governments can involve citizens in decision-making. Some data indicates that 79.9% of the 1,094 Japanese local governments ensure some form of public participation in decision-making. The topics of consultation mostly relate to urban planning, but also to the environment. Therefore, public participation is mostly implemented through local initiatives and voluntary approaches, while the legal framework does not provide strong guarantees for it (Okubo 2013).

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<sup>7</sup> Ministerial Circular of 13 July 2006.

### 3 Participation in Local Energy Planning in France

In France, the legislator acknowledges the role of local governments in environmental conservation and the fight against climate change.<sup>8</sup> It created a special planning tool: the Local Climate Energy Plans (LCEP) (in French, “Plans climat-énergie territoriaux”), which include some participatory processes for all citizens. The objective of participation and its forms vary from one local government to another.

#### (a) Local Climate Energy Plans and Participation

LCEPs are planning tools created by the French legislator in order to foster action at the local level, in the climate and energy sectors. LCEPs are instrumental elements of the national environmental strategy, which aims to reduce GHG emissions by 2020, use energy more efficiently, and produce more renewable energy.<sup>9</sup> Since 2010, their adoption has been compulsory for most local governments.<sup>10</sup> This should lead to the adoption of about 446 plans in total.

LCEPs are made up of 3 sections: objectives (in terms of adaptation and mitigation), an action plan with a focus on energy (improve energy efficiency, increase renewable energy production, reduce GHG emissions from activities),<sup>11</sup> and an assessment of results. Local authorities are free to define the process of adoption of the plans; however, the action plan must include activities favouring awareness-raising of all the stakeholders interested in the implementation of the plan (R 229-51 C.Env.).<sup>12</sup>

#### (b) Participation Goals and Expected Impacts

A survey among local governments that organised participatory processes to work on their LCEPs shows that they had three objectives: first, to enrich the action plan with new ideas; second, to create a partnership for the definition and the implementation of the plan; and third, to share information on climate change issues (ADEME 2013).

Scholars expect even more. They believe participation will influence people’s behaviour in many ways. First, it may enhance the acceptability of the side effects of environmental projects (such as increases in taxes, or changes in landscapes). Second, it can help raise awareness and foster efforts by citizens. Third, it can allow for the establishment of long-lasting public policies and can help keep the climate debate on the public agenda (ADEME 2013).

#### (c) Forms of Participation

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<sup>8</sup> Art. L-1111-2 Local Governments Code.

<sup>9</sup> France is member of the European Union and is bound by the 2007 Energy and Climate Package, which fixes the following targets: A 20% reduction in EU greenhouse gas emissions from 1990 levels; Raising the share of EU energy consumption produced from renewable resources to 20%; A 20% improvement in the EU's energy efficiency.

<sup>10</sup> More precisely, it is compulsory for (*Régions* (first subnational level), *départements* (second subnational level), and *communes* (last tier and lower local governments) of more than 50 000 inhabitants).

<sup>11</sup> Art. L 229-26 Environmental Code.

<sup>12</sup> Art. 1, Decree n°2011-829 11 July 2011.

Participation processes were varied, and organised at different stages of the LCEPs development. In the city of Guimgamp, suggestions for the plan were collected through online questionnaires, public debates, and other events. Face-to-face interviews were held to ask people how they thought they could easily reduce their energy demand. In the town of Chamonix, a permanent forum has been opened online, and workshops were organised around some topics such as transportation, housing, waste management, and tourism, in order to debate and get feedback on these issues. In some provinces such as Bouches-du-Rhône, the plan, once drafted was submitted to online consultation before its final adoption. To raise awareness, many cities, such as Dunkerque, published thermo-maps of the residential buildings. This showed the buildings' level of energy efficiency. The city government also set up local agencies to support the citizens in taking action, for instance through energy-saving measures.

#### **(d) Conclusion**

To summarize, the most common form of LECP participation measures were workshops, seminars and project committees, as well as public meetings and information campaigns. Online forums, surveys and polls were also used (ADEME 2013).

The management of energy demand relies heavily on information and communication during the decision-making process. Local governments provide climate information and highlight actions and behaviours, which can reduce energy consumption. Through awareness-raising and the registration of the action plan, they aim to increase citizens' engagement to ensure a better application of the plan. France therefore provides an example of participation in planning, where the involvement of the citizens takes place during the decision-making phase. Other approaches exist, for instance in the case of Japanese smart grids discussed below, where participation happens at the implementation stage.

## **4 Participation in Local Energy Projects in Japan**

In Japan, the need to trigger an energy transition towards a low carbon society has been accelerated by the Fukushima disaster, and concerns about energy security following the closing of the country's nuclear power plants (which accounted for about 30 % of energy production). Smart grids are a response to these challenges. Based on user participation, and the objectives and forms of participation tend to be the same across smart grids.

### **(a) Smart Grids in Japan**

Smart grids are innovative local energy systems where users are involved directly in the management. Japan has launched several smart grids projects.

#### *(i) Smart Grid Definition*

The expression "smart grid" refers to an electricity production and consumption infrastructure that is enhanced with information and communication technology (ICT) for improved monitoring and control of supply as well as demand balance in the electric power system (Geelen et al. 2013).



The active participation of household end-users is an essential aspect of the successful implementation of smart grids (Geelen et al. 2013). In fact, households are the first users of the different technologies employed to manage energy demand, as well as the first source of feedback over this use.

The design and operation of smart grids are fundamentally different from usual systems, which are centralized, and fossil fuel based. They involve new stakeholders and new business models (Mah et al. 2013). Yet governments remain a major actor in their implementation. Through their regulatory activities, governments can facilitate the large-scale development of these grids, for instance through tariff systems or liberalization measures for the markets (Mah et al. 2013).

#### *(ii) Japanese Smart Grids*

The Japanese central government believes smart grids are an opportunity to reduce energy demand and a way to integrate renewable energies into the network of production and consumption (World Energy Council, 2012). The establishment of smart grids was thus largely promoted by the national government, which works in partnership with the private sector and local governments. The Ministry of Economy, Trade and Industry (METI) is in charge of monitoring the development of the projects. Four pilots projects were launched in 2010 (in Kita-Kyushu, Kyoto, Toyota City and Yokohama) and should be completed by the end of 2014. Seven new projects are set to follow (Mah et al. 2013).

One strategic aspect of smart grids is to focus on energy demand and households. To that end, technological tools are installed in residential buildings. For instance, Home Energy Management Systems (HEMS) collect information to identify unnecessary energy use and control home appliances accordingly. These are combined with tariffs policies, which favour the use of electrical appliances out of demand peak hours.

#### **(b) Participation Goals and Expected Impacts**

The main objective of smart grids is to favour the introduction of new tools to reduce energy demand and GHG emissions. But this goes hand in hand with changing behaviours. The adoption of innovations is a social process of communication and learning in which people gradually become familiar with innovative tools and decide whether or not to adopt the innovation (Geelen et al. 2013). The use of technology therefore requires the participation of citizens, and transforms the users into “energy-citizens” or “co-providers” of the service (Devine-Wright and Devine-Wright 2004, Owens and Driffill 2008). This phenomenon is also described as a shift from demand side management (DSM), where measures to reduce end-energy users’ demand are set up by the local governments or the utility companies themselves, to demand side participation (DSP) where end-users are directly involved in the process. In this scheme, co-provision stands as an intermediate stage depending on the levels of control, responsibility, power and activity between suppliers and users (Devine-Wright and Devine-Wright 2004). This user-centred perspective and participatory approach reduce the chance that final consumers become barriers to change (Verbong et al 2013). The main goal of this form of participation is to familiarize people with the use of new technologies and services as well as to change behaviour.

### (c) Forms of Participation

In smart grids, households can participate in managing energy demand by using electricity efficiently, avoiding consumption during demand peak times, and producing energy and/or trading it (Geelen et al. 2013). They can do so through various kinds of products and services, including micro-generators, storage systems, smart appliances, energy monitoring and control systems. Time variable prices and contracts are associated with these tools to incentivize the changes in behaviours (Geelen et al. 2013). To favour participation and encourage citizens to enter the scheme, financial rewards and incentives are also offered, to make sure that they do not lose money in comparison with the traditional energy systems.

### (d) Conclusion

Participation is an important aspect of the introduction of new technologies, in order to make sure that they spread and used. As such, public participation contributes to the successful implementation of smart grids. Participation in Japan has educational and informational dimensions, where the local government (or even the utility provider) sometimes accompanies households in becoming familiar with the technology. However, smart grid projects appear to be largely state-driven, as the central government steers the local governments' plan of action, and gives way to the private sector. In addition, citizens have no say over the project design.

## 5 Discussion

The French and Japanese experiences in participation are quite recent; therefore, it is difficult to draw definitive conclusions. Yet some preliminary remarks can be formulated on the basis of the observed impacts of participation.

### (a) Impacts of Participation

A 2013 study on LCEPs provides some feedback on the French participatory experience (ADEME 2013). The results are based on 68 case studies, about 80% of which included some participation processes. The organisation of public participation appears to have been stimulating mostly for local authorities, which became more active than before in their climate-related activities. For other stakeholders, such as individuals, it merely helped to increase awareness. Yet it also created opportunities to gather different stakeholders and fostered dialogue between them. This way everybody learns about the skills, powers and resources of the various actors. It also highlights the citizens' expectations and sometimes some potential conflicts. Frequently, however, participation processes were too closed. They were not open to dialogue, and proceeded on the bases of predetermined sets of issues, limiting debate. These processes also did not allow alternative viewpoints to emerge (such as the questioning of the economic model of development, for example) (ADEME 2013).

In Japan, although a significant number of households' participation in the pilot projects is expected (200 in Kitakyushu, 900 in Kyoto, 67 in Toyota and 4 000 in Yokohama), as of 2013, the actual number of

customers involved was limited (about 1/5) (Mah et al. 2013). Thus, there is not enough real feedback from the users to draw out significant trends. As a consequence, user benefits are not apparent and cannot be used as a driver to enhance participation. Moreover participation remained very much within the limits set by the utilities companies in charge of the technological aspect of the project, as well as by the Japanese government. Local governments played a minor role. Only the city of Yokohama contacted the households directly to present the project and thus obtained a greater degree of public participation than other cities (Mah et al. 2013).

As regards participatory processes, the French experience better fits the definition of participation in decision-making provided by Principle 10 of the Rio Declaration. Yet as regards the assessment of participation as a way to reduce and manage energy demand, there are no clear results. In Japan, although participation – as a process – is limited to the implementation stage, some positive environmental data has been published. In Kyoto in 2010, GHG emissions decreased by 63% in comparison with 2007 levels; in Yokohama and Kitakyushu they decreased by 30% and 35% with respect to the 2005 level. In Toyota, households reduced their emissions by 182 tonnes CO<sub>2</sub> on average, per year. However the recent start of the projects impedes the collection of sound environmental and energy data related to the participation of users and their potential change of behaviour associated with the use of new technology.

#### **(b) Impact Analysis**

A first question, which arises from the difficulty in assessing the participation impacts over energy demand, is the value of participation in general. In France, the assumption is that public participation is a way to reach better decisions, in particular regarding environmental policies. Yet some studies show that conflicts and litigation are sometimes a better way to raise environmental concerns (ADEME 2011). Indeed in Japan, environmental law developed following several environmental disasters (e.g. the “four big pollution diseases” which broke out following some man-made pollution disasters in the 1910s, 1950s and 1960s). These disasters caused citizen protests and were the basis of several judicial proceedings where judges developed significant case law and compensation mechanisms (Imura and Schreurs 2005). Another argument against the value of participation is that technologies, which might be good at the global level, such as renewable energy installations, might be contested at the local level. For instance, wind-farms are contested for their damage to landscapes and wildlife; the same happens with waste management recovery sites. Finally, it is not obvious that citizens share environmental concerns. Economic and social concerns may be their priority and may contradict environmental strategies. Thus, in the energy sector, as in others, there is a debate over the value of deliberation and participation (Owens and Driffill 2008).

The examples of participation presented in this paper are very different from each other. In France, local governments play a key role, while in Japan the state and business parties play an important part. Two challenges emerge from the participation experiences observed in the two countries. In France, citizens’ voices are heard but their actual involvement in the implementation of the plans is not clear. In

Japan, local authorities have traditionally led public participation processes. Yet in the smart grids projects, their role was limited. The central government, in partnership with the utility companies, designed and led the greatest part of the projects. One challenge is therefore to keep the local public interest at the centre of the scheme, so as to reach positive environmental results. It is therefore important to extend participation to the decision-making stage to enhance confidence in the new system and to yield all the benefits of the smart grids. Since technology cannot fully take the place of changes in consumer behaviour, information and education about the system are needed (Gangale et al. 2013).

In the end, the Japanese and the French participation experiences reflect two major approaches to participation as identified by Beresford (2002): the “consumerist approach” (or “managerial approach”) and the “collectivist approach” (or “democratic approach”). Both of these aim at bringing changes in a system and influencing its development. But the consumerist approach searches for external inputs, which are later used discretionarily by the initiative agencies (policymakers, service providers). The collectivist approach is concerned with ensuring that participants have the direct capacity and opportunity to make changes. The first model is instrumental. Consultation and participation help to collect information for the improvement of a service. The second fosters personal and political empowerment (Beresford 2002; Loncle and Rouyer 2004). The collectivist approach creates processes that help by empowering the people and giving them a say over activities, while the consumerist approach leaves decision making power in the hands of the original providers of the service. This division points to the difficulty in defining democracy in increasingly complex and technological societies, and in framing participation towards specific policy objectives (Owens and Driffill 2008).

## 6 Conclusion

In conclusion, although the research is at an early stage of progress, two recommendations can be drawn from the analysis of the participation experiences observed in France and Japan.

### (a) Recommendation 1: Maintain participation from the pre-decision stage to the implementation stage

In France, public participation in LCEPs is applied differently from one local government to another. Some organise it before the drafting of the plan, others at the time of the action plan definition. But there are only a few local governments that maintain public participation during all the different stages of the process (drafting, defining action plan, and implementation).

In the smart grids in Japan, citizens are actively involved only at the latest stage of this energy demand strategy. Then the scope of their participation is framed within the options offered by the utility company, which manage the entire electrical system.

In these two cases there is a loss of the public’s interest along the chain of decision-making. Punctual adjustments are not possible because the feedback over the progress of the implementation of the strategy is not foreseen.

## (b) Recommendation 2: Focus on environmental goals to define the forms of participation

The assessment of public participation requires taking into account a great variety of criteria. Some of them are relevant to the process of participation itself, while others focus on the impacts of the process for the policy at stake, i.e. energy demand management. The difficulty lies in combining the two sets of criteria, and establishing the link between participatory processes and the effects on the environment.

In the first case, criteria may be how many people have access to the debates, the variety of stakeholders, the openness of the question, or the tools used to reach the people, among others. So far, assessments are often limited to this first set. But a second set of relevant criteria relate to the mitigation of GHG emissions associated with the reduction of energy demand or the changes in behaviours observed. Therefore it seems important to take into account the local current as well as past economic and social contexts, to identify the real potential of the action of different stakeholders, as well as the biggest energy consumers. This information then needs to be reflected in the participatory processes to specifically target energy demand management.

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