

## EXECUTIVE SUMMARY

Competitive markets help maximize the benefits of resource use across society by providing a mechanism to allocate these resources to the highest value user. However, markets can fail to achieve this outcome due to market failures such as public goods, externalities, or increasing returns to scale. These have provided a rationale for government intervention in markets. The case for regulatory intervention, though, rests on the implicit assumption that government failure does not occur, and that if it does occur, then it does not outweigh the costs of the market failure to be remedied. Excessive or poorly designed regulations can negatively affect innovation, lower economic efficiency, and reduce investments resulting in real costs to the economy.

The potential benefits of best practice regulatory reforms, which include enhanced economic growth, better environmental sustainability, strengthening the rule of law, and other societal goals, can be significant. It is also recognized that achievement of the benefits requires effective supporting institutions including high level political commitment to regulatory reform, effective independent regulators and a mechanism to effectively coordinate activities between different levels of government. Many economies and multilateral organizations such as the Organisation for Economic Co-operation and Development (OECD) and APEC have developed best practice regulatory guides. These guides highlight similar key themes. They typically stress the importance of:

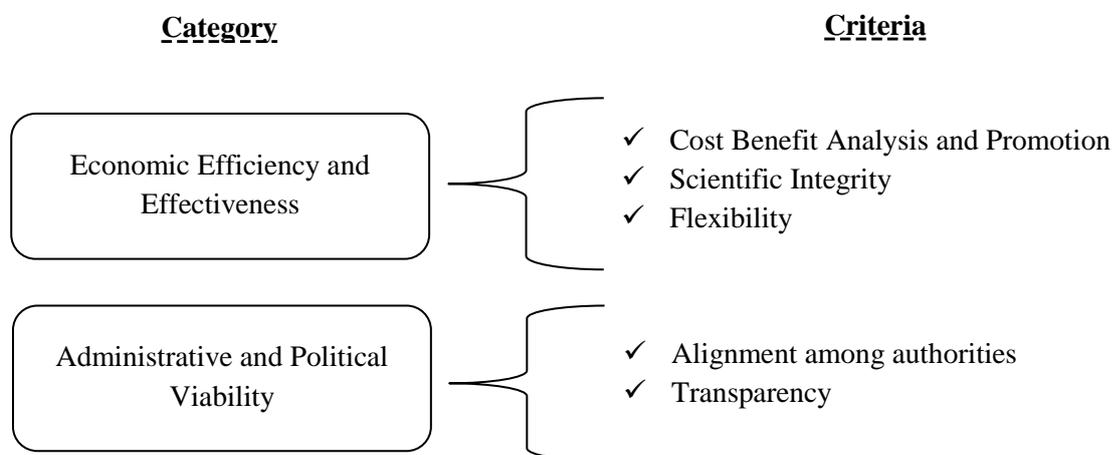
- The need to clearly define the policy problem and the rationale for government intervention.
- Consideration of a range of policy options, including a do-nothing approach.
- Assessing the full range of social costs and benefits of the proposed policy options through a regulatory impact assessment or RIA (i.e. benefit/cost analysis).
- Transparency and public consultation that help governments collect more information and resources, increase compliance and reduce the risk of conflict. These also enhance the quality of rules, strengthen compliance, and reduce enforcement costs for both government and citizens subject to rules.
- Alignment of policies across government agencies and between different levels of government. This will avoid the potential for overlapping and potentially conflicting objectives.
- The need for regulatory review to ensure the on-going efficacy of existing regulations

As part of APEC's efforts to encourage good regulatory practices, this project has developed case studies on the implementation of regulatory policies of selected APEC economies in order to draw lessons on regulatory reform, by analyzing different experiences in formulating and implementing policies to improve energy efficiency (EE) in some sectors and promote certain renewable energy (RE) technologies. The following chart shows which APEC economies and sectors were selected as case studies:

	<i>Energy Efficiency</i>			<i>Renewable Energy</i>		
	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
	Building (Commercial and Residential)	Transportation (Public and Private Sector)	Household Appliances (including lighting)	Conventional Biofuels	Geothermal	Solar PV
Australia					✓	✓
Indonesia				✓	✓	
Japan	✓		✓			
Philippines		✓	✓			
Thailand	✓					✓
US		✓		✓		

As can be seen, two case studies were introduced for each selected sector. Since policies and regulatory practices may differ for each APEC economy, these case studies by sector will contribute to the understanding of policies according to each economy’s policy direction and economic situation.

The structure of the case studies in this report is similar. They described the size and significance of the sector in the selected APEC economy and identified a series of policies that were implemented by governments to promote investments in the selected sectors and meet policy targets of energy security and environmental sustainability, which are the most common objectives that regulatory reforms seek to accomplish in these sectors. Each case study assessed whether the process to carry out these policies followed certain criteria (good regulatory practices) to facilitate the successful implementation of reforms. These criteria are classified as follows:



Since the focus of this report was to draw lessons on regulatory reform from the case studies, the Executive Summary focuses on the lessons learnt on the implementation of regulatory policies in the selected sectors and APEC economies. These findings may be useful for policymakers, as it highlights what regulatory aspects should be taken into account when formulating and carrying out policies to meet domestic objectives and promote green investments in energy efficiency and renewable energy.

## LESSONS LEARNT

### Economic Efficiency and Effectiveness

**1. There is potential for APEC economies to improve the effectiveness of their renewable energy and energy efficiency policies by drawing on the experiences of each other and following best practices within APEC.**

A theme that emerges across the case studies is that many APEC economies could improve policy outcomes by adopting practices already prevailing in other APEC economies. Industrialized economies typically have greater experience in energy efficiency and renewable energy policymaking, and the policies they are currently implementing are often an outcome of a policy evolution process spanning several years. Developing economies can avoid the setbacks and pitfalls inherent in such a process by draw on such experiences and adopting proven best practices.

A good example is provided by the case study on energy efficiency in appliances. Japan adopted the Top Runner program for improving energy efficiency in appliances after trying out energy performance standards for many years. The Top Runner program, by simply taking the existing best performing appliance as the target to be achieved in the next period, simplifies the regulatory process and allows manufacturers flexibility in how they wish to achieve the target. Given that the regulatory process for enacting minimum energy performance standards in the Philippines has suffered from regulatory lags and a lack of flexibility, there is clearly unutilized scope for the Philippines to learn from Japan's experiences in the area.

**2. Policy revisions are more frequent in industrialized APEC economies, making the policy process more flexible. The design of individual policies sometimes but not always allows flexibility in achieving policy objectives.**

Timely revisions to policies are important in ensuring that policies remain relevant and able to adapt to changing circumstances. In this aspect, industrialized economies in APEC tend to perform better than developing economies, with regular policy revisions more the norm in the former rather than the latter. Both the US and Japan have a history of regularly revising their policies, whereas regulatory lags have been a challenge in economies such as Thailand and the Philippines.

Designing policies so as to enhance the flexibility with which objectives are achieved can play an important role in mitigating the costs of implementing policies and making policies more responsive to changing circumstances. The APEC experience with energy efficiency and renewable energy policies suggests that such flexibility is not always achieved in the regulatory process. This can be illustrated by a comparison of solar PV policies in Australia and Thailand. Australia has increasingly shifted towards technology-neutral policies such as the Renewable Energy Target and carbon pricing, which allow renewable energy and carbon mitigation objectives to be flexibly achieved using the least cost technology option available. Thailand's solar PV polices by contrast are technology-specific and thus not able to shift resources between renewable energy technologies in response to changing market conditions.

**3. In general, regulatory policies have been driven by good science in industrialized and developing economies. Nevertheless, policymakers sometimes assign excessive weight on this factor to decide on the formulation of policies.**

Scientific integrity is an important factor in designing policies. If regulations are not supported by good science, flaws may appear and make it more difficult to reach the objectives that these regulations are aiming. Many of the case studies show that regulatory policies have been sound from the scientific perspective. For instance, the case studies on energy efficiency in buildings in Japan and Thailand show that the building codes were designed based on scientific analysis, principles and evidence. Similarly, fuel standards in the United States are scientifically sound and have been determined by a process to maximize lifetime economic net benefits from the imposition of standards.

However, in some cases, the existence of technical potential to produce energy from a particular renewable technology or generate energy savings seems to encourage governments to institute wide-ranging policies to promote them, at a great cost to the economy. A clear example is given by the case studies on biofuels. Despite many years of government support to the industry via subsidies, tax credits and grants, among others, it has not been possible to produce an economically-viable biofuel as an alternative to fossil fuels. In addition, the production of biofuels seems not to take into account issues that may contribute to environmental costs such as the emissions caused from the change in land use. The regulatory process could be improved by emphasizing other factors (such as costs and efficiency) together with scientific and technical potential when formulating renewable energy and energy efficiency policies.

**4. Cost-Benefit Analysis (CBA) is not the norm in the implementation of policies. Making CBA available to public could be crucial to assist policymakers to remove potential obstacles to reform.**

The report found that CBA are not conducted in many occasions and when a CBA is conducted, it is often not accessible to the public. This was corroborated in interviews with some policymakers. Industrialized economies tend to use more cost-benefit tools, such as Regulatory Impact Assessments (RIA), but they do perform little better than developing economies in terms of the utilization of CBA.

The application of CBA for important policy decisions is an important tool that could be used more frequently by governments to allocate scarce resources in the implementation of policies to promote green investments. A well-executed CBA provides a means to reduce instances of regulatory capture by interest groups and raise the transparency of the regulatory process. In the absence of CBA, policies could be implemented at a cost that might not be justified. In addition, CBA can also be carried out *after* policies are implemented as a way to evaluate existing policies and provide directions for future regulatory reform.

A good example on the use of CBA is found in the case study of household appliances in the Philippines. The Government of the Philippines estimated that the cost of implementing the Energy Efficiency Component of the Climate Investment Plan, which promotes the introduction of more energy efficient appliances, was going to be around USD 24 million and the economic benefit of energy savings was going to reach USD 19.8 million per year, which meant that the project was likely to generate net social benefits in less than 2 years.

**5. Regulatory policies have been overly focused on energy savings and other policy benefits, rather than cost-based measures.**

Ideally, the regulatory process should incorporate both the benefits and the costs of the different policies, and emphasize those that can best achieve policy benefits without incurring too high a cost. Across the APEC economies, there is considerable emphasis on the benefits of policies promoting

energy efficiency and renewable energy. However, the relative costs of alternative policies are often not sufficiently recognized, and in such cases the regulatory process is not sensitive enough to the varying cost-effectiveness of different policies.

The implications for policymaking vary. In some cases, the analysis suggests that the policy benefits can currently only be achieved at a high cost, so that policymakers need to consider whether the policy objective is worth pursuing given the costs involved. For instance, government subsidies for solar PV in Australia and Thailand both achieve carbon emissions mitigation at a very high cost of more than \$400 per ton of CO<sub>2</sub> abated. Similarly, the fiscal burden from the support given to biofuels is considerable in both the US and Indonesia.

In other cases, some policies can be identified as being more cost-effective than other policies in achieving similar policy objectives, suggesting that policymakers should promote the set of policies that has been shown to perform better. A good example is provided by fiscal and financial incentive policies in Thailand to promote increased energy efficiency in the buildings sector. A comparison of the financial incentives in place shows that tax incentives generate considerably higher energy saving benefits and leverage a greater amount of private investment, relative to the cost, than the other schemes. This suggests that future policymaking efforts should look at increasing the level of support provided to tax incentives relative to the other financial incentive policies in place.

#### **Administrative and Political Viability**

**6. Alignment among authorities is more common in industrialized economies. However, both industrialized and developing economies face issues like overlaps in policy design and implementation.**

In order to facilitate the implementation of regulatory reforms to promote green investments, alignment among institutions is very important. Reforms are usually comprised by a number of measures that fall under the responsibilities of several institutions. In several occasions, policy implementation did not take place or only occurred at a slow pace due to the lack of proper coordination among authorities. In some cases, the problem arises because there are no institutional mechanisms that support institutional alignment and effective coordination. In other cases, some mechanisms may exist, but different interests among the relevant institutions and no clear leadership accentuate these problems. Cases with better alignment among authorities are those with solid coordination mechanisms (for instance: inter-ministerial committees, such as Japan in the case study on buildings, or councils with mandate to coordinate policies across governments at different levels and institutions, such as Australia in the case study on geothermal energy) or those with a centralized decision-making systems (such as Japan, when deciding on standards and labels for household appliances).

If institutions are not aligned, the cost incurred may be high. This has been the finding for many of the case studies that identified subsidies and other fiscal incentives to encourage the development of renewable energy. For example, the biofuels sector has been receiving support throughout several programs and at several stages of production. Some companies have taken advantage of this situation by tapping into multiple sources of subsidies.

Alignment is not easy and that represents a challenge when governments at many levels are involved (for example, local, state and federal or central governments). In fact, despite the existence of suitable coordination mechanisms, policy overlaps may still happen. For example, the case study of

the solar industry in Australia noted that the Federal Government doubled the rebate available for households for small scale solar PV systems and at the same time, the New South Wales Government introduced a Feed-in-Tariff and offered to buy energy from solar PV systems at a rate that was up to three times the price paid by consumers. This caused a surge in scheme costs and led to the premature cancellation of the rebate program and some Feed-in-Tariff schemes.

**7. The effectiveness of the policy architecture depends not just on how individual policies perform, but also on how well they interact with one another. There are benefits to be realized both from coordinating policies that have complementary effects and from avoiding duplication of policies that are close substitutes.**

Alignment among policies is critical to the effectiveness of regulatory reforms for green investments. Even well-designed individual policies may not be able to achieve all the potential benefits if the alignment between them is inadequate. The case studies on energy efficiency and renewable energy policies in APEC economies illustrate both examples where policies are well-aligned and examples where there is scope for improving the alignment between different policies.

When policies have complementary effects, there is a case for introducing and implementing them in a coordinated fashion so as to maximize the overall benefits from the set of policies. This is particularly so with standards and labels for appliances and buildings, since labels can provide information on how well manufacturers are complying with standards and thus increase incentives for compliance. Japan's building standards and labels, and the Philippines' appliance standards and labels, provide good examples of coordinated implementation of standards and labels that could be worth replicating in other sectors and economies.

Conversely, when policies are close substitutes of one another, there is a danger of duplication which can increase the costs of implementing the policies without measurably increasing the benefits. An example is the Australian solar PV sector, where the co-existence of carbon pricing and the Renewable Energy Target scheme is likely to increase the cost of achieving Australia's emission reduction target without adding much to the total level of abatement achieved due to the duplication of efforts.

**8. Transparency and stakeholder engagement are the norm rather than the exception. Nevertheless, some drawbacks may exist if interest groups are too strong and attempts to conduct reasonable reforms are blocked in the absence of effective leadership of the regulatory process.**

In general, laws and regulations are available to public through various means, including online access. Moreover, transparency has also increased at the level of policy formulation. Governments are aware of the need to engage stakeholders in the process to design policies. Meetings with business and consumer associations and other groups are common. Furthermore, some of the case studies show that a formal framework for stakeholder consultations allows interest groups to submit their positions and comment on the draft of proposed regulations.

Stakeholder engagement is very important as it brings legitimacy into any regulatory reform process. Nevertheless, some problems may appear if the objectives of relevant stakeholders differ significantly and/or strong interest groups are opposing the implementation of reasonable reforms. Leadership plays a key role here to establish consensus among the different parties and allow reforms to take place.

In other cases, stakeholders may not be involved in the process, as they may not have the technical capacity and resources to provide inputs in the consultation process. Capacity-building involving the private sector and civil society may be useful to improve the participation of stakeholders in this process.

### **Some Recommendations for Future Work**

The APEC Economic Committee and the Friends of the Chair on Regulatory Reform may consider developing future work on the following matters:

1. To promote the use of Cost-Benefit Analysis and work closely with the APEC Energy Working Group to develop metrics assessing regulatory policies on energy efficiency and renewable energy.
2. To share experiences and discuss the benefits of using ex-post analysis of instituted regulatory policies, in order to get a better understanding of the existing measures/programs and facilitate flexibility by fine-tuning policies and achieve objectives.
3. To strengthen the discussion on formal mechanisms to strengthen stakeholder consultations.
4. To discuss how to foster scientific integrity in developing and implementing regulations.
5. To consider how to enhance harmonization among authorities.
6. To discuss methodologies for ex-ante Regulatory Impact Assessments.